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THE DENTAL TIMES.

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PROSPECTUS.

The introduction of the DENTAL TIMES to the notice of the professional public, commences with this number, and we propose briefly to present a general outline of its design, object, and what it is hoped it may accomplish.

The design of the publishers is to collect and diffuse such information as may be of daily use to the Dentist, either in the office, laboratory, or study; as that instruction is ever the most valuable that can be used in daily practice, its benefits accruing to both patient and practitioner. Theory, when founded on inferences drawn from established principles, in a dental journal, should not be lost sight of; yet it is our aim to make the DENTAL TIMES as *practical* a magazine as possible; an assistant to the working as well as the thinking dentist.

The editorial corps is composed of gentlemen who are engaged in teaching special branches of their profession, and they propose to contribute articles in their several departments. The publishers of the journal solicit and hope to receive contributions from the profession, or those interested in its advancement, their columns being ever open to the student, the worker, or the teacher; having but one aim, viz.: the promotion of Dental Education and Literature, they confidently hope for the co-operation and patronage of the Dental public.

The DENTAL TIMES will be issued on the 1st day of July, October, January and April, and, as its name indicates, will "*keep pace with the times*," and thereby assist its readers in so doing.

MATTER AND ITS PROPERTIES.

BY T. L. BUCKINGHAM, D. D. S.

Before we consider the properties of matter, it will be necessary to explain what we understand by the term matter. Webster defines matter to be "the substance of which all bodies are constituted," and this is probably as clear an explanation as can be given; anything that has magnitude, occupying a certain space and preventing all other substance from occupying that space, is called matter.

Two theories have prevailed in regard to the ultimate constitution of matter—one was that matter could be divided infinitely, and we would be compelled to believe this to be so from one mode of reasoning; for we cannot conceive of any substance being so small but that it could be divided into two, if we had instruments sufficiently delicate, or at least it could be theoretically divided, and the two parts into four, and so on without limit. This can be demonstrated by a very simple problem. If, on a horizontal line, a perpendicular be raised, and a segment of a circle be drawn from one line to the other, a line starting at the point where the first two lines meet, running out at an angle of forty-five, would divide the segment of a circle into two equal parts; another line at an angle of twenty-two and a half divides one of the parts into two, this process might be continued without limit; for if we imagine one of the original lines to be extended to an indefinite length, and the smallest space between it and another line starting from the same point, then the two lines cannot be parallel, and will divide any line crossing them into larger or smaller parts, as it may be nearer or farther from the starting point.

The above is not now held to be the correct hypothesis. At the present time the theory of atoms or molecules is the one that prevails. That is, that matter was created in certain definite fixed sizes and shapes, although these particles are exceedingly small, and so minute as to admit of no division, still they have a definite size and shape.

Sir Isaac Newton writes, in regard to the atomic theory:

"It seems to me that God, in the beginning, formed matter in a solid mass of hard impenetrable particles, and that these particles being solids, are incomparably harder than any porous bodies compounded of them—even so very hard as never to wear or break in pieces. No ordinary power being able to divide what God made one in the first creation."

Chemistry has also shown that it is constituted of particles possessing definite and limited magnitudes. These particles, (or atoms as they are called,) are never changed in any way whatever, but remain the same in size, figure and weight through all their various combinations.

I might here say something about the size of the atoms, but as they are so exceedingly small, it is difficult to conceive an idea of their magnitude. Gold can be beaten into leaves so thin that it takes $\frac{1}{282,000}$ to make an inch in thickness. Dr. Wollaston drew platina wire to the $\frac{1}{30,000}$ of an inch in diameter, and although it is nearly the heaviest metal, a mile of the wire only weighed a grain.

Professor Silliman, in his Principles of Philosophy, gives some very interesting statements of the "minute divisions in the animal and vegetable kingdoms." He remarks, in reference to the red corpuscles in the blood of man and the musk deer: "In man the diameter of these

corpuscles is the 3,500 of an inch, and in the musk deer only the 12,000 of an inch—therefore, a drop of human blood, such as would remain suspended from the point of a cambric needle, will contain about 3,000,000 of corpuscles, and about 120,000,000 might float in a similar drop drawn from a musk deer.

"But these instances of the divisibility of matter are far surpassed by the minuteness of animalcules, for whose natural history we are indebted chiefly to the researches of the renowned Prussian naturalist, Ehrenberg. He has shown that there are many species of these creatures so small, that millions together would not equal the bulk of a grain of sand, and thousands might swim at once through the eye of a needle. These infinitesimal animals are as well adapted to life as the largest beasts, and their motions display all the phenomena of life, sense and instinct. Their actions are not fortuitous, but are evidently governed by choice, and directed to gratify their appetites and avoid the dangers of their miniature world. The stagnant waters of the earth, (and sometimes the atmosphere,) everywhere are populous with them to an extent beyond the powers of the imagination to conceive their numbers. Their siliceous skeletons are found in a fossil state, forming the entire mass of rocky strata many feet in thickness and hundreds of square miles in extent.

"The polishing-slate near Bilin, in Bohemia, contains in every cubic inch about 41,000 millions of these animals. Since a cubic inch of this slate weighs 220 grains, there must be in a single grain 187 millions of skeletons, and one of them would therefore weigh about the 187 millionths of a grain.

"It is impossible to form a conception of the minute dimensions of these organic structures, and yet each separate organ of every animalcule is a compound of several substances, each in its turn comprising numberless atoms of carbon, oxygen and hydrogen."

Matter has certain forces or properties. One, which is universal, is the force of gravitation. "*Every particle of matter attracts every other particle in the direct ratio of its mass, and in the inverse ratio of the square of its distance.*"

It is not necessary to enter into any long explanation of this force. It differs from all other forces as it acts upon all matter, and is in proportion to the quantity and the distance. A very limited explanation would require more space than is intended to be given in this paper. I will therefore pass on to another force—adhesion. This force only acts at an immeasurably small distance, and between particles of matter of different kinds, but the different kinds of matter must have affinity for each other. Wax, when softened, will adhere to a piece of wood, but if the wood be oiled or wet with water, the wax will not adhere to it, the oil or water preventing it from coming in close contact. Mercury will not

adhere to glass. Two pieces of wood may unite with glue, which frequently has greater tenacity than the wood, so that in attempting to separate them, the wood will break before the glue will separate from it. Fluids have the property of adhering to solids, but not in all cases. Water, for an example, will adhere or wet wood or glass, but it will not tallow or other oily substances. This adhesion between fluids and solids is seen in a very curious phenomena, capillary attraction.*

It is not necessary to show this phenomena that a tube be used. If a piece of glass be held vertically in water, the water will rise up on the glass above the surface of the surrounding water. If another piece of glass is placed in the same position as the first, and brought within a quarter of an inch of it, the water will rise between them. The height of the water will be in proportion to the close proximity of the glasses. This phenomena is shown better with tubes than with plates of glass; if the tube has a very small bore, the water will rise a considerable distance in it, (in a tube $\frac{1}{100}$ of an inch bore, the rise will be about 4 inches.) By coloring the water, it can be seen very plainly.

Capillary attraction is very important in nature; it is by this process that the surface of the earth is kept moist in dry weather. The rain, when it falls in large quantities, is absorbed by the earth until it becomes saturated: then when the weather is dry, and the moisture on the surface is evaporated, the water again returns to the surface by this adhesive attraction between the earth and the water. This process can be shown by taking some dry porous earthy substance, as a brick, or piece of dry clay, and putting the lower part in water, when the part out of the water will soon become moist. It is also by this that our lamps are kept burning, the oil or whatever fluid is used, is conducted up the wick by capillary attraction, the heat evaporates it, forming it into gas which burns, giving off heat enough to evaporate another portion, which also burns, and so the process goes on until the oil is exhausted. Or, if we put some alcohol in a tumbler, and in another tumbler some water, set them close together, and connect the fluids by a piece of lamp-wick, the water will pass over into the tumbler containing the alcohol, and the alcohol will pass over into the water. This process will go on until they become equally mixed.

We see in endosmose† a process very similar to the above, and probably owing to the same cause.

But to consider this subject now, would lead us too far from what was intended in this article, namely—giving a mere outline of the constitution

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* Capillary, from *capillus*, a hair, a tube having a very fine bore not larger than a hair.

† Osmose, exosmose, or endosmose, are names given to the process by which fluids pass through membranes, inwards or outwards.

of matter, and the forces connected with it. It is my intention at some future time, to take up each of the subjects and treat them more in detail.

The next force to be considered is cohesion, a force that acts upon matters of a similar kind at an insensible distance. This force is opposed by another—*repulsion*—the one tending to draw and hold particles or atoms of matter together, the other forcing them apart, each of them acting on the atoms or molecules.

The force of cohesion is seen in the tenacity of the metals; take iron as an example. We all know with what firmness the particles of iron are held together, a wire of the $\frac{1}{12}$ of an inch in diameter will sustain a weight of more than five hundred pounds before the atoms will separate; but this cohesive force is not as great in all metals, for a leaden wire of the same diameter is broken by twenty-seven pounds weight. The repulsive force is as great as the cohesive. It would take as great a weight to compress either of the above metals into a smaller bulk, as it would to break them. Cohesion does not usually take place between solids; small pieces of most metals or glass will not adhere by pressure alone, but if they are heated to a degree to fuse them, so that the atoms are at liberty to arrange themselves into definite matter, they cohere when cold. In the case just mentioned, the heat was the repulsive force, for the atoms were driven apart until the cohesion was lost by the distance between them, and as soon as the heat was removed, the atoms came close together, and became firmly united, or they assumed a certain arrangement, so as to become fixed, (for particles of matter are not always further apart in the fluid state,) neither is it necessary that matter must be in a fluid state to allow the atoms to arrange themselves differently. Solid matter, when brought into a semi-fluid, or doughy condition, will unite as in the case of welding iron. Metals that are soft, when the surfaces are perfectly clean, unite if pressed together; two pieces of lead forced together with a twisting motion, unite so as to require considerable force to separate them.

It has been a question whether gold can be welded by the pressure of an instrument. I was, at one time, inclined to think it could not; but, from more recent experiments, I think, probably, I was not altogether correct. Gold can be united by pressure if heated just before the pressure is applied. This can be shown by heating a plug of gold, (either an old one that has been in a tooth for years, or a new one made for the purpose,) and passing it between a pair of rollers, when the gold appears perfectly solid.

Platina is welded by reducing it to a fine powder, and heating and hammering it; there are some cases where solids unite without heat. Two pieces of glass, ground perfectly smooth, will unite, by being pressed, so perfectly that they cannot be separated. They can be cut as a solid

piece, and even when fractured show no disposition to separate at the place where they were united.

A metal that melts at a much lower temperature than another, and has an affinity for it, will unite with it, if the second metal is heated to the melting point of the first, and has its surface perfectly clean. It is by this process that soldering is performed; the borax which is used cleans the surface, and the solder, when melted, unites the two pieces. But in order to solder, there must be an affinity between the two metals or alloys that are used; lead will not solder zinc or iron, for there is but little affinity between them; but zinc will solder iron, as these two metals unite very readily.

The cohesion in fluids gives them the spherical form when falling through the air, or suspended from a point, or on a surface to which they will not adhere—as melted lead, in manufacturing shot, poured from a high tower, assumes a round form and becomes solid before it reaches the bottom. Drops of water on the point of a glass rod are nearly round, and a small quantity of pure mercury, on a glass plate, rounds up into a globular form. It two drops of water or globules of mercury are brought in contact they immediately unite and form one—this is due to the cohesive attraction between the atoms.

It will be noticed that I have mentioned but three forces in this article; there are others. One of the most important is chemical affinity, which will be a subject for another paper.

THE PHOSPHATES IN DENTAL HYGIENE.

BY EDWARD PARRISH.

The great natural reservoir of the phosphates is in the igneous rocks, which contain phosphoric acid, combined with lime, magnesia, alumina and the oxides of several of the heavy metals, in minerals which are both numerous and widely diffused. Through the slow process of solution in the waters which permeate the crust of the earth, minute quantities of these generally insoluble salts are carried to the roots of plants, the delicate spongioles of which are continually drawing the fluid from the loosened soil to traverse the plant and be eliminated from its porous leaf surfaces. The mineral constituents being retained in the juices of the plant, are assimilated into its structure, and thus, through the vegetable food consumed by animals, are conveyed to the higher order of living beings, to the growth of which they are so essential. The importance of the supply of the mineral phosphates to the human system, is apparent from their presence as normal constituents of the blood, of the gastric juice, of the bones, and throughout the tissues generally, and their elimination in the

urine and feces, so that any deficiency in the supply of these constituents must of consequence impair the health and vigor of the individual, and in early life especially, must interfere with growth and development.

This deficiency may occur from want of food containing a proper proportion of phosphatic salts, or from defective nutrition, both causes of common occurrence in a condition of society in which are found the half-fed poor, the pampered rich, the over-worked student and the dissipated idler, and in all conditions of life, the ignorant, the vicious and the negligent. Suitable and well-prepared food for all, though it would be a great desideratum, would not secure a normal condition without ample and well adjusted clothing, the avoidance of excesses, sufficient mastication of food, attention to personal cleanliness, free exercise in the open air and sunshine, and an observance of all the laws of health.

It is, in a great measure, by the neglect of these laws that the necessity is entailed upon the community, of doctors, and dentists and pharmaceutists; and it is to supply, by appropriate artificial means, those necessities of the system which grow out of defective hygiene, that the three kingdoms of nature are ransacked in the interest of materia medica. How, then, can the chemist supply the much needed phosphates to the weak and imperfectly developed? How can the dentist promote the growth of healthy teeth by supplying to the child at the period of dentition, the chief constituents of these important organs? This is the inquiry that it is the object of the present paper to answer.

An obstacle to the successful introduction of the artificially prepared mineral phosphates into the system, is found in their great insolubility, not only in water but in the digestive fluids—unless these are, at least, normally active. So that it is believed that precipitated phosphate of lime, one of the most common of these, when administered in powder, is liable to pass through the alimentary canal almost without diminution in quantity.

Prof. Jackson, of the University of Pennsylvania, was one of the first physicians to appreciate the advantage of eligible combinations of the phosphates in the proportions theoretically applicable to supply the waste in the system, and it was at his instance that some of the pharmaceutists of Philadelphia first attempted the application of chemical principles to this end. The first published recipe of the series which culminated in the so-called *Chemical food*, was for a syrup of phosphate of lime; this was published in 1853, by Durand, Jr.; and was followed in the following year by the formula of T. S. Weigand, for a syrup of undissolved phosphate of lime, in which that salt, without excess of acid, was contained in a pulpy magma favorable to its absorption and assimilation, and an essay by Prof. Procter, indicating the methods of extemporaneous prescription best

adapted to administer the several phosphates. As the demand for these combinations extended, other pharmaceutists, improving upon these formulæ, succeeded in combining in a liquid form the mixed phosphates, in the proportion indicated by Prof. Jackson; and in 1857 I furnished to the editor of the *American Journal of Pharmacy* a formula, which has since been pretty generally adopted, and has been found to give entire satisfaction when skillfully executed, not only as embodying the requisite materials, but also as constituting an elegant and agreeable pharmaceutical preparation.

It has long been a rule with some of the leading pharmaceutists, to introduce no new remedy which shall be unpleasant to the taste, and acting on this idea, the solution of phosphates is made into a syrup and colored a rich strawberry color by the aid of cochineal; the flavor adopted is that of orange-flower, and the acidity caused by the excess of phosphoric acid necessary to make a perfect solution, takes from the syrup the clawing sweetness, which is apt to become unpleasant to adults by long-continued use. The name adopted for this remedy has added greatly to its popularity; many persons who object to taking medicine, are attracted by the title *chemical food*, and finding benefit from its use, this prejudice is overcome. Each dose contains two and a half grains of phosphate of lime, which, according to recent investigations, is essential to the formation of cells, and which is an element of prime importance in dental hygiene, as a leading constituent of the teeth; one grain of phosphate of iron, a very popular "hæmatogen," fractions of a grain of phosphate of soda and potassa, adapted to promote digestion, and to supply deficiencies in the secretions, and an excess of phosphoric acid, an admirable acid tonic.

In those cases where the indication is simply to supply phosphates of lime and iron in an assimilable form, free from an excess of acid, as in young children, whose tendencies are to deficient development of the osseous structures, the following extemporaneous preparation may be prescribed:—

Chloride of Calcium, ʒiss.,
Phosphate of Soda, ʒvii,
Sulphate of Iron, ʒij,
Syrup of Ginger,
Water, of each, *f* ʒiv.

Triturate the chloride of calcium with the phosphate of soda, and three fluid ounces of the water, till the decomposition is complete, and a smooth mixture is obtained, then add the syrup, and finally the sulphate of iron, previously dissolved in a fluid ounce of the water. The resulting mixture consists of the hydrated phosphates of lime and iron, with inconsiderable amounts of sulphate of soda and common salt, rendered pala-

table by sugar, which always commends a medicine to the favor of children.

In my work on Pharmacy, now under revision for the third edition, I have given other forms of preparation of this series of salts; they have impressed me as worthy the attention of dentists, who meet with so many evidences of imperfect nutrition of the osseous system.

At the risk of being charged with exaggerating the merits of this class of nutritive tonics, I am induced to relate, in conclusion, a case mentioned to me some years ago, by Dr. John H. Parrish, of Greensboro, Alabama, a physician of large experience and undoubted veracity. A colored slave on a plantation within his circuit of practice, had been long afflicted with a diseased bone of the leg, which having been under treatment, had grown so much worse of late, that he had determined to amputate it. The time was fixed, and the patient put under the use of *chemical food* as a preparatory tonic; meanwhile the doctor was taken ill with a hemorrhage from his lungs, followed by great prostration, which prevented his attention to practice for months. When he returned to his patient, he found him so far recovered as to be able to walk with facility, the discharges had nearly or quite ceased, his condemned limb was restored, and for aught we know, he may now come to the ownership of himself—*a whole man.*

ALLOYS OF GOLD.

BY E. WILDMAN, M. D., D. D. S.

Gold combines with nearly all metals, and for some it has a strong affinity. These combinations, with the exception of that with mercury, are called alloys.

The alloys of gold tend to form definite compounds, and unite in their atomic proportions or chemical equivalents. This property is illustrated in the native gold of the auriferous sands, which is always found alloyed with silver in the ratio of one atom of silver to either four, five, six or twelve atoms of gold, but never with a fractional part of an atom.

Definite atomic combinations undoubtedly take place whenever gold is alloyed, but as the alloys are mixed with each other, or with uncombined metal, they are obscured in most cases. Pure gold is too soft to be used as a base in constructing dental substitutes, hence it is alloyed for the purpose of imparting to it hardness, tenacity and ductility, and for this purpose silver, copper, either separately or in combination, and also platinum are used. Sometimes zinc, either alone or in combination with copper, in the form of brass, is added, generally with a view to give the same quality of gold a lower point of fusion, as in solders.

As gold in the dental laboratory is liable to be contaminated with some

of the base metals, it will be proper to give a passing notice of the effects of such deteriorations, before touching upon the properties of the combinations of gold with the metals commonly used as alloys.

The general property possessed by combinations formed of groups of dissimilar metals, viz:—the less fusible metals, as gold, silver, platinum and copper, with the more fusible, lead, tin, zinc, bismuth, &c., is that the malleability, when cold, is less than that of the superior metal, and when heated barely to redness they are extremely fragile, and fly to pieces under the hammer. This property is so strikingly illustrated in the combinations of gold with some of the base metals, such as arsenic, antimony, lead, tin and bismuth, that when they are present, even in minute quantities, its malleability is destroyed, and it is rendered intractable.

An alloy, one part of *arsenic* to 240 of gold, forms a gray, brittle compound, and even one part of the former metal to 900 parts of the latter, although the color remains unchanged, the alloy is rendered brittle. The affinity of gold for arsenic is so strong that the former is rendered brittle when subjected to the vapor of the latter.

An alloy, containing one-ninth of *antimony*, forms a pale, brittle metal, and when antimony is present, even in the small proportion of one to 1,920 of gold, its malleability is destroyed.

Lead, *tin* or *bismuth*, alloyed with gold in the proportion of one part of either of the former to 1,920 of the latter, render the gold brittle and unmanageable. The alloy of gold with tin is of a light color, those with lead are darker.

The affinity of gold for lead or tin is so strong that, in swaging plates, if every adhering particle of these metals should not be removed, the heat, in annealing, will cause a union between the gold and base metal, and the surface of the plate will be contaminated.

An alloy of tin 1 or 2 parts to 23 or 22 of pure gold, has been recommended as a fine solder for gold. The brittle nature of the alloys of gold and tin, render them unfit for solders to be used in making artificial dentures.

Zinc appears to have less affinity for gold than either lead or tin, although it unites readily with it. Zinc hardens and whitens gold. Zinc and gold in equal parts form a white, very hard, brittle alloy; eleven parts of gold to one of zinc, make a brittle alloy of a pale greenish color; one part of gold and one part of brass, form a brittle alloy.

Zinc, either alone or in combination with copper, in the form of brass, is sometimes alloyed with gold to form solders. In alloying gold with zinc or its combinations, the metal should not be subjected to a long-continued heat, as the zinc is so volatile that it would be dissipated and the proportions destroyed. Among the different alloys of gold with zinc for

solders, that I have tested, the following, when properly compounded, has produced the most satisfactory results; it flows readily and remains unchanged in the mouth, and is eighteen carats fine. The profession is indebted to Dr. S. L. Mintzer, of this city, for the formulæ, the proportions are:

Pure gold, 18 parts;
Pure silver, 3 parts;
Brass wire, 3 parts.

The gold and silver are first melted together, under borax; when thoroughly incorporated, the brass is added, and as soon as well mixed, pour into the ingot mould.

Iron, in minute quantities, does not seriously injure the working qualities of gold. One part of iron to eleven of gold, produces a malleable alloy. Yet for dental purposes, care should be taken to remove all particles of iron.

Copper is extensively used by jewelers and dentists for alloying gold, generally in combination with silver. It imparts to the alloy a reddish color, which is heightened in proportion to the ratio of copper used, rendering it more fusible and harder than pure gold, without materially impairing its malleability. Gold beaters add from three to twelve grains of copper to the ounce of gold, to give the red tint to gilding leaf, the average thickness of which is only $\frac{1}{282.000}$ of an inch.

An alloy of gold 76 parts and copper 24, which is about nineteen carat fine, forms a brittle crystaline metal. This is a definite compound represented by the formula Au. Cu. By varying the proportions of this alloy, its brittleness will be diminished.

According to the researches of Mr. Napier, of the Mexican Mint, that in an alloy of copper and gold in a state of fusion, the volatility of the latter metal is owing, in a great measure, to the presence of copper. And from recent experiments, it has been satisfactorily ascertained that copper exerts a similar influence over silver when in combination with it, a state of fusion causing loss by volatization.

Silver unites with gold, in every proportion imparting a paler color, proportioned to the amount of silver introduced. It renders gold more fusible, harder and tougher, without materially affecting its malleability. It is used in making gold leaf when pale gold is required. The hardest alloy of gold with silver is two parts of the former to one of the latter metal.

For making plate and solder, silver is used either alone or in combination with copper, to alloy gold. When in combination, copper reddens and causes it to take a higher and more exquisite finish, while the silver

softens down the red tint, at the same time renders the alloy less objectionable for dental purposes.

Platinum, although termed an infusible metal, yet in contact with most other metals, and heated to their fusing point, it readily enters into combination with them. It unites with gold, and when combined in small proportions renders it harder and more elastic, without materially injuring its malleability.

Platinum, when present even in minute proportions, renders gold pale and dull colored.

An alloy of gold with platinum has been recommended as resisting the action of abnormal secretions of the mouth better than the ordinary alloys. In one case that came under my observation, where the secretions were peculiarly acrid, an alloy of pure gold, 22 parts with 2 of platinum, remained unchanged in the mouth, where a fine plate alloyed with copper and silver was rapidly corroded.

Platinum is present in most gold that has been worked for dental purposes, caused by the fine particles of this metal becoming incorporated with the filings in trimming the pins before soldering, and in finishing up the stays or backings of the teeth.

In commercial phraseology, and by dentists and jewelers, the quality of gold is designated by the term *carat;* this is used to express the fineness, not weight. Thus 24 carat gold is pure gold; 23 carat gold contains 23 parts of gold to 1 of alloy, and 18 carat gold 18 of gold and 6 of alloy.

A more scientific method, the one adopted at the Mint, is to rate the fineness of gold by expressing the proportions in thousandths. Thus, the standard of American gold is 900 thousandths; meaning that in every thousand parts of coin there are 900 parts of pure gold, and 100 of alloy.

When we have the purity of the alloy expressed in thousandths, we can readily ascertain its carat, and vice versa.

Thus, if we desire to find the carat of American coin which is 900 thousandths fine, the statement is made thus:

1000 : 900 : : 24 : 21.6, the carat required.

Or, having the fineness of the American coin expressed in carats (21.6) we desire to reduce it to thousandths, the statement is made thus.

24 : 21.6 : : 1000 : 900, the number of parts of pure gold in one thousand of the alloy.

I am induced to give the following rules for alloying gold, believing that they are more comprehensive than any that have been offered to the profession:

1. When the carat is known, to find the quantity of pure gold:

Rule.—Multiply the weight by the carat, and divide the product by 24.

Or, let C represent the carat,
" W " " weight.

$$\text{Formula: } \frac{W \times C}{24} = \text{quantity of pure gold.}$$

Example.—To find the quantity of gold in 156 grains of an alloy of 19 carats fine:

$$\frac{156 \times 19}{24} = \frac{2964}{24} = 123\tfrac{1}{2} \text{ grains of pure gold.}$$

2. When the quantity of pure gold in an alloy is known, to find the carat:

Rule.—Multiply the weight of pure gold by 24, and divide the product by the weight of the mass.

Or, let A represent the weight of pure gold;
" W " weight of mass;
" C " the carat.

$$\text{Formula: } \frac{A \times 24}{W} = C$$

Example.—In an alloy weighing 110 grs., containing pure gold 80 grs., copper 20, and silver 10, to find the carat of the mass:

$$\frac{80 \times 24}{110} = \frac{1920}{110} = 17.45 \text{ carat of mass.}$$

3. To find the carat of a mass composed of different qualities of gold, the carat and weight of each quality being known:

Rule.—Multiply the weight of each quality by its own carat, and divide the amount of the products by the weight of the whole mass.

Example.—To find the carat of a mass of gold composed of 10 oz. of 20 carat gold, 15 oz. of 12 carats, and 20 oz. of 10 carats:

10	×	20	=	200
15	×	12	=	180
20	×	10	=	200
45				580

$$\frac{580}{45} = 12.88 \text{ the carat of mass.}$$

4. To reduce gold to a lower carat by adding an alloy containing no gold:

Rule.—Deduct the required carat from the carat to be lowered, then

divide the remainder by the required carat, the quotient multiplied by the weight will give the quantity of alloy to be added.

Or, let A represent the carat to be lowered;
" B " " required carat;
" W " " weight.

Formula: $\frac{A-B}{B} \times W =$ weight of alloy.

Example 1.—To reduce 200 grains of 24 carat pure gold to 18 carats:

$$\frac{24-18}{18} \times 200 = \frac{6}{18} \times 200 = \frac{1200}{18} = 66.6 \text{ grs. of alloy.}$$

Example 2.—To reduce 258 grains of 21.6 carat gold (an Am. Eagle) to 18 carats:

$$\frac{21.6-18}{18} \times 258 = \frac{3.6}{18} \times 258 = \frac{928.8}{18} = 51.6 \text{ grains of alloy.}$$

5. To reduce gold to a lower carat by adding to it an alloy of gold of a standard lower than the desired carat:

Rule.—Subtract the required carat from the carat to be lowered, divide the remainder by the difference between the required carat and the carat of the coarser alloy, then multiply the quotient by the weight, and it will give the weight of the coarser alloy to be added.

Or, let A represent the carat to be lowered;
" B " the required carat;
" C " the coarser alloy;
" W " the weight.

Formula: $\frac{A-B}{B-C} \times W =$ weight of coarser alloy.

Example 1.—To reduce four ounces of 24 carat gold to 18 carat by adding 12 carat gold:

$$\frac{24-18}{18-12} \times 4 = \frac{6}{6} \times 4 = 4 \text{ oz. of 12 carat gold to be added.}$$

Example 2.—To reduce four ounces of 22 carat gold to 18 carat by adding 12 carat gold:

$$\frac{22-18}{18-12} \times 4 = \frac{4}{6} \times 4 = 2 \text{ oz. 5 drs. 20 grs. of 12 c. gold.}$$

6. To raise the carat by adding pure gold or a finer alloy:

Rule.—Deduct the carat to be raised from the required carat, and divide the remainder by the difference between the required carat and the carat of pure gold, (24,) or that of the finer alloy, (which ever is used,) and then multiply the quotient by the weight, and it will give the weight of the pure gold or finer alloy to be added.

Or, let A represent the carat of pure gold or finer alloy;
" B " the required carat;
" C " the carat to be raised;
" W " its weight.

Formula: $\frac{B-C}{A-B} \times W =$ weight of pure gold or finer alloy.

Example 1.—To raise 240 grains of 15 carat gold to 20 carats, by adding pure gold, (24 carats:)

$$\frac{20-15}{24-20} \times 240 = \frac{5}{4} \times 240 = \frac{1200}{4} = 300 \text{ grs. pure g. to be added.}$$

Example 2.—To raise 45 ounces of 12.88 carat gold, (see rule 3,) to 18 carat, by adding gold of 21.6 carat, (American coin:)

$$\frac{18-12.88}{21.6-18} \times 45 = \frac{5.12}{3.6} \times 45 = \frac{230.40}{3.6} = 64 \text{ oz. of coin to be added.}$$

The subject relating to melting, working alloys of gold, and those proper to be used in making plates for artificial dentures, will be treated upon in a future article.

DENTAL EDUCATION.

BY J. MARCELIN, D. D. S.

The subject of education has, within a few years past, received an increased amount of interest, and even the present troubled state of the times, has failed to divert public attention to any great extent therefrom. The efforts made for the training and instruction of even the more humble portion of our large communities, have met with ample support and encouragement and produced results highly gratifying to every liberal mind. This progress is also manifested in the higher departments of science and art, and the most eminent teachers are brought into requisition to meet the growing necessity. In no profession has there been greater progress manifested, and a more enlightened demand made on the part of the public than in ours, that of dentistry. Until within a few years, it has not been deemed necessary for a dental practitioner to prepare himself by a thorough course of study for the duties of his profession. In many places common artisans have undertaken some of the most complicated dental operations; in some instances, by dint of strength, succeeding in removing the obstinate and resisting molar; in others, producing results most disastrous to the unfortunate patient. At the present time no person is considered a dentist by the mere possession of a case of instruments. A general knowledge of anatomy and physiology is indis-

pensable, and the relation each organ bears to another is necessary to a proper understanding of the treatment of the teeth. To the student in this department, the dental colleges afford great facilities for improvement.

Besides the theoretical knowledge to be obtained, all-important in itself, a great variety of interesting cases are presented in the clinic which call for a direct application of those principles which are there taught. In the establishment and maintenance of such institutions, people may have some surety that their interests will be properly subserved, at least in the recognition of some established guarantee against imposition and quackery. The services of skillful and accomplished dentists, would secure to the fairer portion of society, advantages from which I fear many of them are excluded, by the bungling operations of those who have unwarrantably and unblushingly assumed the duties of the profession, and certified their pretensions by advertising their miraculous performances and unheard of discoveries. In every mind the great Creator has implanted an intuitive sense and perception of what is called by Physiognomists and Phrenologists the "beautiful." Personal beauty in the structure and formation of man, has been defined to be the "regularity and symmetry of features, the expression of the eye and the complexion; all associated in the human face." And on the assemblage of such graces, and the attraction of such an exhibition, is it to be wondered at, that the fairest portion of the creation should be more than anxious to preserve and cherish these desirable appendages of the Creator's wisdom and power? Is it not, then, a matter of the highest interest, that the face, in which these graces of personal beauty are assembled, should be protected from those disfigurations and deformities often induced by the operations of inexperienced and self-created dentists? Dental literature is also becoming more general and diffused. To the new Journal now presenting its claims for public consideration, permit me to extend my most cordial welcome.

You will no doubt meet with difficulties, but patience and determination will overcome these. Of the benefit which your journal is calculated to confer, I expect to share largely; and among all our large cities, I know of no one more desirable for such an enterprise, than Philadelphia. The able professors and successful practitioners, who have so long conferred their benefits upon the great city of William Penn, fully justify me in this opinion. I congratulate you, Messrs. Editors, and the profession generally, that the good work of improvement in all matters calculated to elevate the standard and usefulness of our profession is happily enlarging its labors and extending its benefits. Associated with such labors and benefits, may your Journal long prove a most successful and honored co-operator.

New York, June, 1863.

THE DENTAL CLINIC.

BY JAMES TRUMAN, D. D. S.

What constitutes a clinic in a college for dental instruction? This question is doubtless asked repeatedly by two classes of inquirers; one desiring to cultivate a more liberal education than can be granted them under private tuition, and the other, those who have limited their vision of professional examinations to the four walls of their own office. In view of this want I deem a full description of the operative department of the *Pennsylvania College of Dental Surgery* of sufficient moment to merit a place in the initial number of a journal that will probably reach many hesitating as to the necessity, and doubtful of the advantage likely to accrue from a thorough dental education; and while thus balancing their fears with selfish motives, need but the trifling word of good advice to cast the beam in the right direction. *The importance of a well regulated clinic* needs no argument to enforce its position in the mind of any unprejudiced practical thinker. In all collegiate institutions, the instruction must always reach from cause to effect, from the rudimentary thought to the practical illustration. Theories will be enunciated from the desk to little purpose, if the student fails daily and hourly to follow these to their legitimate results. The human mind needs the wear and tear of active experience to mould theory to the stern lines of fact. The truth of this is more clearly evident in the elucidation of dental science than perhaps any of the so-called learned professions. While we always hope to have a clearly defined theory as the corner stone of our superstructure, the education received must always keep the ultimate end in view—a thorough reduction of theory to practice. Hence, in the establishing of dental colleges, the clinical demonstrations of the operative and mechanical departments have been of first importance; for, without these properly managed to produce best results, the college was weakest where force and energy were most needed. In order to carry out this desire to its fullest extent, the first and most important consideration to the student was

PATIENTS.

In order that these could be induced to submit to operations seldom agreeable under the most skillful hands, it was necessary to appeal to the selfish interest, the desire to accomplish the greatest benefit at the least possible cost. While in some of the colleges for dental instruction, the partial compensatory plan was adopted, this institution from the beginning adhered to the rule, that they have never yet seen any good reason to depart from, to make *all operations free*. The result has been that the duties of demonstrator and students have never been clogged for want of the necessary material to draw from. I am well aware that this has a

tendency to rouse the prejudices of the few, where a dental college may be located. That these prejudices are unfounded, it only needs a daily intercourse with the patients flocking to our rooms to learn that the great mass who enter there would not be likely to lay the foundation of a very profitable practice for any of our professional brethren. To take a more enlarged view of the case, such prejudiced persons must bear in mind, that whatever result may inhere to the individual, the profession at large will be benefited in an untold degree in the education thus received by the poorer classes. The importance of the dental organs to health and happiness are here taught them as they would be taught nowhere else. The whole history of dentistry has been one long battle against deep-rooted error and absurd prejudices. Though the duty of enlightening the public mind, and disabusing it of error, belongs to each member of our profession, it falls particularly to the lot of those who occupy educational positions. The intelligent few are now reaping the rewards of instruction well given and equally well profited by, from those who have preceded us. The great and even more important work of instructing the mass, steeped in terrible and fatal ignorance, falls to our lot; and should we fail to reap the advantage in our own generation, those who tread in our footsteps will gather the fruit, and the world will be the gainer in health, comfort and cleanliness.

The Pennsylvania College opens the 19th day of October for the delivery of introductory lectures, and to allow such students as may be in the city opportunites to practice. From the 1st of November until the close, the demonstrations never lack the necessary stimulus, a want of patients. I have not statistics by me to give a definite idea of the numbers in attendance daily. Reports have been kept heretofore of those only who have been taken under treatment. But our rooms are daily overcrowded by a motley throng, clamorous for the attention that necessarily can be afforded only to the few. All the varied forms of disease that the dental organs take upon themselves, are here manifested; each patient is subjected to an examination, and those received are distributed to the students according to their ability to perform. Patients are required to be punctual to their engagements, and submit to the care of the inexperienced, as well as the more advanced student. The difficulties and discouragements that always attend an entrance to our profession, are thus easily surmounted, and that without the sacrifice of feeling that repeated disappointments often bring in a private office.

OPERATING ROOMS.

These are divided into two: the operating room proper, and the extracting department. The former is at present arranged for eighteen

chairs, divided into rows of six each. The students are formed in classes, without regard to ability—each class being assigned to a particular row, changing each day. Engagements are kept by the Demonstrator, in a book properly classified, and always open to the inspection of the students. It is expected and required that the latter will perform their whole duty to the patients of whom they have taken charge.

The extracting department is amply furnished with all the necessary instruments, and is placed daily under the charge of two students, taken in regular order from the roll, so that all have an equal opportunity for practice. All extracting for the day must be performed by them, unless otherwise directed. Patients have not the privilege of selecting the student to perform this duty. To the inexperienced this is a most valuable department. All, perhaps, can recall the tremor with which the first tooth was approached, and the uncertain efforts made to keep the nervous agitation from the patient. The ample practice here very soon enables the merest tyro to grasp boldly all the difficulties he may encounter, or that will probably be met with in his future professional life. During the last session, over two thousand teeth of all kinds were removed, evidence sufficient that practice in this department is rarely wanting.

DEMONSTRATIONS.

The operating rooms are open daily, except Saturday, for practical demonstrations in all that pertains to operative dentistry. On that day, at the same hours, the time is occupied by clinical instruction, from some one of the Professors, in illustration of the various subjects taught from their chairs. The students are required to be punctual in their attendance at the daily clinic, as the operations begin immediately at the hour named, and the right to chairs not occupied fifteen minutes after the hour is lost. The first half hour is devoted to making engagements; after that the time of the Demonstrator is wholly devoted to the interests of the students. The inexperienced are taught the proper mode of manipulating, from the formation of the simplest cavity, to its final completement as a good filling. Each operation is subjected to a critical examination, and while it cannot be expected that equally good work will be done, the utmost that can be accomplished will be required of each. The process of culture must of necessity be gradual. In all branches of acquirement, the preliminary steps are the most important, and, to secure a substantial educational basis in our profession, is to every student of vital consequence. The beginner is therefore kept on operations that are best fitted to develop his latent powers, till at such times he may show himself capable of grasping the more difficult problems that follow in the course of instruction. To one accustomed to the slow and uncertain methods of study and practice,

necessarily adopted in private practice, it would be a cause of astonishment to witness the rapid advancement made by pupils in the course of one session. Every course of this Institution has demonstrated the fact, that with the necessary mental qualifications, the perfectly raw student can produce, by four months' practice, better results than are usually exhibited in years of effort where the training has not been intelligently directed. That all will be equally successful is not to be expected; but the incentive is always present, and he must be a dull scholar indeed, whose progress will not be rendered doubly rapid by the constant exhibition of great excellence around him. Association is the chief spur of the human intellect, and through its influence alone we can procure better results, than in the tame routine of office experience.

CHARACTER OF OPERATIONS.

The operations that present themselves are as varied as the diseases we are called upon to treat. As I remarked before, the patients are subjected to a critical examination, and should any remarkable phenomena present themselves, the students are expected to examine the case, and receive such instructions as are deemed necessary. This is an especially valuable feature of the clinic, and one not exhibited in the formal reports. Cases are constantly occurring, which, while they do not admit of treatment, are replete with the instruction so necessary in future practice. The range of fillings of course extends from the simple cavity on the masticating surface of a molar tooth, to the most difficult and complicated operation known to the profession.

The students who are not occupied, have the privilege and are expected to watch carefully and critically all the operations performed in the clinic. Many of the higher class of fillings inserted in this Institution, would seem to leave little more to be desired, were we not fully aware that we are yet in the infancy of our profession, and that the most enlarged and liberal culture in theory and practice must be the constant aim of those professing to teach in its several departments. I cannot but regard it as matter for severe reprehension, that it has not been settled as the fundamental doctrine of our profession, that a radical and systematic course of instruction should be the basis to qualify any one entering its—as I believe—sacred precincts.

INSTRUMENTS REQUIRED.

The student is expected to furnish his own instruments for the operative department; and to those who intend entering on their first course, I would suggest that they had better defer procuring instruments until they have entered their names as students. The almost universal mistake is made of supposing that quantity supercedes quality and adaptation to the

operations to be performed. Comparatively few instruments are needed to meet all their wants, and these can be selected under the supervision of either the Professor of Operative Dentistry, or the Demonstrator. The College furnishes all instruments necessary for the Extracting Department.

ASTRINGENTS.

BY GEO. T. BARKER, D. D. S.

The great majority of the remedial agents used, and indicated in the practice of dental surgery, belong to, or possess some of the properties of the class denominated astringents, and it is therefore important that each dentist should properly recognize and understand their appropriate uses, properties, and the abnormal conditions requiring their administration. The name astringent has been given to a class of remedies, because of their possessing a certain power which induces contraction, corrugation and consolidation of living tissues. Cullen has defined them to be "such substances as applied to the human body, produce contraction and condensation of the soft solids, and thereby increase their density and cohesion." The effect of astringents is much greater when used externally; but it cannot be doubted that, when used internally for the purpose of obtaining a constitutional impression, they are absorbed into the blood, and are transmitted to all parts acting by direct contact. The local effect of astringents is shown particularly when applied to the mucous membrane of the mouth—a small piece of alum, for instance, taken into the mouth causes instant contraction and puckering of all the adjacent tissues, accompanied with a sense of stiffness or dryness.

Nearly all astringents possess the power of coagulating or precipitating albumen, and this power extends to dead as well as living tissue. Muscular fibre, for instance, when placed under the field of the microscope, is seen to contract when an astringent solution is applied. The chemical influence of astringents on the albumen and gelatin of dead tissues is exhibited by the tanner, who uses an astringent bark containing tannic acid,—the active principle of all the vegetable astringents,—for tanning leather. Insoluble tannates of gelatin and albumen are thus formed, but this chemical action does not take place in living tissue, as the presence of the life force arrests and modifies chemical affinity. Astringents do, however, coagulate fluids and discharges which contain albumen, and by their consolidating influence diminish the calibre of both secretory and nutritive vessels, thus arresting hemorrhage, morbid discharges, and inflammatory action. It is this power which makes them so valuable

as antiphlogistic agents to the dentist, as he is thus enabled to treat inflammatory conditions of the mouth, and through their agency restore it to health.

The constricting action of astringents is supposed to be expended principally upon the unstriped muscular fibres which are found present in the walls of capillaries, in the substance of the heart, coats of the stomach and intestines, in the lining of the ducts of glands, and in the middle coats of the arteries; therefore, most if not all of the astringents may be spoken of as styptics, and, indeed, our most valuable remedies for the arrestation of hemorrhages are selected from this class. They also possess a tonic power, due to the presence of certain principles which will receive attention hereafter; they are also said to invigorate the appetite and to promote digestion. But though astringents possess these properties, ranking them with the general stimulants, when used immoderately or for a long time, they cease to act as stimulants, but become direct irritants, exciting, when taken internally, gastric and intestinal pains, and when used externally, induce inflammation and subsequent sloughing of the part to which they have been applied.

The indications for the use of astringents, both external and internal, are identical, and may, therefore, be treated of conjointly. As has been previously stated, one of the first indications is to arrest inflammatory action, particularly in its earliest stage. This is accomplished by increasing the tonicity of the tissue, and diminishing the calibre of the blood-vessels, thus lessening the current of blood so necessary for the production of inflammation. They are, therefore, called for particularly as local applications in the treatment of inflammation of the mouth, fauces, conjunctiva, intestines, rectum and skin. A second indication for the use of astringents is to arrest hemorrhages or to overcome abnormal discharges; in fulfilling this indication, when used externally, they do not, it is supposed, act upon the disease from which the discharge has its origin, or in any way modify the constituents of the blood, but that their influence is simply to diminish the pores or ducts through which the secretion or discharge escapes. The third indication consists in their use to overcome morbidly relaxed tissues—a frequent sequence of disease, or occasionally seen to exist in persons of a lymphatic temperament, manifested by edematous swellings in the neighborhood of joints, and a general flabbiness of the soft tissues. In both cases, general bathing and lotions containing vegetable astringents are found to be of exceeding benefit. Astringents are divided into two classes—Vegetable and Mineral. The following belong to, and are the most prominent of, the vegetable astringents:

OFFICINAL NAMES.	COMMON NAMES.
Acidum Tannicum,	Tannic Acid,
Acidum Gallicum,	Gallic Acid,
Catechu,	Catechu,
Galla,	Galls,
Geranium,	Cranesbill,
Hæmotoxylon,	Logwood,
Kino,	Kino,
Krameria,	Rhatany,
Quercus Alba,	White Oak Bark,
Quercus Infectoria,	Black Oak Bark,
Rosa Gallica,	Red Roses,
Rubus Villosus.	Blackberry Root.

As many of these possess properties identical, and are used principally internally, such will be selected from the above list for consideration as may be used profitably in dental practice.

Tannic acid, the active principle of the vegetable astringents, is a most valuable agent, and should be found on the case of every dentist. It exceeds the others named in its astringent power, and possesses a strong affinity for albumen, gelatin and fibrine, with which it forms insoluble compounds. Tannic acid is extracted from galls, by means of ether containing a little water; but for a more extended account of the method for obtaining it, the reader is referred to the U. S. Dispensatory.

It has been highly recommended by Mr. Druitt, (*Am. Journal Med. Science*, xxvi., 201,) for the cure of *aphthous ulcers* of the mouth, and for moderating *mercurial salivation*; also, for reducing *sponginess of the gums*, curing relaxed conditions of the uvula and the pharyngeal mucous membrane. Mr. D. also extols it as a remedy for *toothache produced by caries*. He says: "After scarifying the gum with a fine lancet, a piece of cotton, imbued with a solution of a scruple of tannin and five grains of mastic, in two drachms of ether, is to be placed in the cavity." Where the toothache is due to periosteal inflammation, the above practice may be useful, particularly if powdered tannic acid is occasionally dusted on the gum surrounding the affected tooth. The effect, as heretofore described, will be to diminish the current of blood and arrest inflammation. Tannic acid is one of the ingredients of the many tooth powders of the day—its effect being to overcome sponginess of the gums, arrest hemorrhage from them, and promote tonicity. In treating persistent hemorrhage from the socket of an extracted tooth, tannic acid is exceedingly valuable, and will usually prove successful, though it is, perhaps, inferior as a styptic to some of the preparations of iron which belong to, and will be considered

under the head of mineral astringents. A portion of the powder should be applied to a small pledget of cotton, previously moistened with a solution of gum sandrach, and should then be pressed firmly into the tooth socket.

Tannic acid has also been recommended for the treatment of sensitive dentine. Dr. Taft, in his work on *Operative Dentistry*, says: "When tannin is applied to dentine, there is formed a tannate of albumen, which, being insoluble, protects from irritation, and probably incites to healthy condition, the living parts beneath it."

Externally, tannic acid may be applied either in a fine powder, in a saturated solution, or in an ointment. The following wash has been found useful in a morbid condition of the mouth, arising from the irritating presence of tartar, and neglect to properly cleanse the teeth. The gums will, in such cases, bleed freely from slight causes, and sometimes spontaneously. The treatment is, first remove the tartar, insist upon proper attention to cleanliness of the teeth, and a mouth wash as follows, to be used several times daily:—

℞.—Tannin, grs. vi.;
Aqua, ℥i.—*Misce.*

Another, found exceedingly useful in sponginess of the gums, consists of—

℞.—Tannin, ʒss.:
Tincture tolu and tincture myrrh, aa. *f* ʒij.;
Spirit of horse radish, *f* ℥ij.—*Misce.*

Eight or ten drops to be added to a wineglass of tepid water—the mouth to be rinsed several times daily.

Gallic acid, the second on the list of vegetable astringents, is used almost exclusively for the arrestation of internal hemorrhages, or for the purpose of controlling morbid discharges—it is not used, we believe, at all in dental practice, being inferior to tannic acid as an external remedy.

Catechu, the next named, is an extract from the wood of the *accacia catechu*, a native of India. It comes to this country in nearly square masses, of a reddish-brown color, inodorous, and possessing a bitter astringent taste. It is readily soluble in water, and also yields its virtues to alcohol. The active principles of catechu are tannic and catechuic acids.

"Its medicinal properties were first discovered in 1601, by Garzia del Huerto, physician to the Viceroy of Goa, who stated it to be an efficient remedy for spongy gums, and a drying and astringent medicine, useful, also, in alvine fluxes, and in removing pain in the eyes. According to Lemery, it is adapted to strengthening the brain, lungs and the stomach,

suitable for catarrhs and for hoarseness, to purify foul breath, and to cure dysenteries and diarrhœas."*

Catechu is exceedingly efficient as a local styptic, and is indicated in the treatment of mercurial sore mouth, sponginess of gums, and inflammation or ulceration of the mucous membrane of the mouth. The following formula has been used with advantage in the treatment of spongy gums, arising from salivary calculi, and neglect of cleanliness, or other causes:

℞.—Tincture quillaia, *f* ℥ij.;
Tincture catechu, *f* ℥i.—*Misce.*

A teaspoonful to be added to a glass of water, the mouth to be rinsed several times, and teeth to be cleansed at least three times daily. A few drops of this on the tooth-brush, particularly if it has been flavored, makes a very agreeable mouth wash; quillaia or soap bark being a most efficient detergent or cleanser, the catechu acting as the astringent. As it is often desirable to flavor mouth washes, we would here call attention to an elegant flavor, the formula of which is taken from *Parrish's Practical Pharmacy*, page 272:

Perfume for Adding to Mouth Washes.—Take of—

℞.—Asarum Canadense, ℥ss.;
Orris root, ℥ss.;
Strong alcohol, (Atwood's,) *f* ℥viij.

Make a tincture, and add

Tincture of musk, *f* ℥i.;
Essence of millefleurs, *f* ℥ss.;
Essence of patchouly, gtt. xx.

For inflammation of the gums arising from the extraction of teeth, irregularity plates or other causes, we frequently make use of the following:

℞.—Potass. chlo., ℥ij.;
Tincture catechu, *f* ℥ij.;
Eau de cologne, *f* ℥i.;
Aqua, *f* ℥vi.—*Misce.*

The mouth to be rinsed with a small portion of the solution 20 or 30 times daily. This mouth wash may be diluted advantageously by adding half a pint of water. Dr. Koecker, as a mouth wash after extraction of the teeth, recommends:

℞.—Tinct. catechu and honey, aa. *f* ℥j.

Mix, and dilute in the proportion of three tablespoonsful to a pint of tepid water or warm sage tea; it may be used frequently during the day.

* Stille's Therapeutics and Materia Medica.

Catechu is occasionally added to the charcoal tooth powders for the sake of its astringency.

Galls, excrescences from the branches of a tree growing in Central Asia, Persia and Syria, are seldom used in dental practice. The excrescence is the result of a puncture on the young branch made by a small insect, into which it deposits its egg. Their size is about that of a common cherry. The active principles are tannic acid, gallic acid, and a bitter principle to which the tonic influence is ascribed. They are not much used in general practice, as tannic acid is considered preferable. There is an officinal tincture which is sometimes used, and has been recommended by Dr. Ziegler, as an ingredient in a mouth wash for chronic, relaxed and depraved condition of gums, accompanied with ulceration, (*Dental News Letter*, Vol. iv. page 78.)

℞.—Liq. soda. chlo., *f* ℥ss.;
Tincture gallæ, *f* ℥iss.;
Ammonia muriat., ʒij.;
Mel. opt. *f* ℥ss.;
Aqua rosa, *f* ℥iiiss.—*Misce.*

To be used two or three times daily. Those agents above described are the ones principally used in dental practice. Rhatany is occasionally used, and by some is considered exceedingly efficient as an external astringent. The others named will require no further notice, as they are used principally internally, their general effects having been previously described. In our next, we propose to consider the mineral astringents.

[TO BE CONTINUED.]

MOUTH WASHES AND DENTIFRICES.

BY WM. C. BAKES.

Among the many articles demanded of the Pharmaceutist, there are perhaps none of greater importance than those adapted for the teeth and gums, and the experience of a few years brings to his notice, such a variety of recipes, each one claimed by its possessor as the best of its kind, that their publication might be of interest to the dental profession.

It is not the intention of the writer to say anything of the merits of the different preparations, but merely to offer the formula with the best mode of manipulation. The *frothy* character of some mouth washes is due to the presence of castile soap, or more generally, soap tree bark—a peculiar bark of the quillaia saponaria, a tree indigenous to Chili, South America. The following formula is ascribed to a dentist of this city:

Take of Tincture of Myrrh, 18 fluid ounces,
" " Benzoin, 6 "

Macerate in this

Calisaya Bark, bruised,	1 ounce;
Red Rose Leaves,	½ "
Cochineal,	30 grains;

Displace, and add

Alcohol,	2 pints;
Oil of Roses,	30 drops.

Filter through paper.

Another very popular mouth wash is said to have originated with a celebrated dentist of Baltimore.

Take of Peruvian Bark, bruised,		6 ounces,
Myrrh,	"	3 "
Cochineal,	"	2 drachms;
Alum,	"	1 drachm;

Diluted alcohol made in the proportion of 3 parts of alcohol to 2 parts of water, 4 pints;

Make a tincture by displacement, and add

Oil of Cloves,	1½ drachms;
Oil of Bergamot,	3 "

Lastly, filter through paper.

The following, under the title of *Elixir Odontalgique*, has met with some favor:

Take of Resin of Guaiac, bruised,		2 ounces;
Pellitory Root,	"	½ ounce;
Cloves,	"	2 drachms;
Nutmegs,	"	½ ounce;
Alcohol,		12 fluid ounces;

Macerate and filter, add

Oil of Rosemary,	40 drops;
Oil of Bergamot,	40 "

KREOSOTE TOOTH WASH.

Take of Tincture of Myrrh,		1 pint;
"	Benzoin,	1 fluid ounce;
Cologne Water,		4 fluid ounces;
Alcohol,		2 pints;
Water,		6 "

In a part of this mixture, macerate

Peruvian bark, bruised,		4 ounces;
Rhatany root,	"	1 ounce;

Displace, and pass the remaining portion of the liquor over the ingredients, then add

Kreosote, 3 fluid drachms.

A very pleasant elixir for the teeth and gums may be made by the following process: Take of

Orris root, bruised, 4 ounces;
Red rose leaves, bruised, 1 ounce;
Soap tree bark, " 1 "
Cochineal, " ½ "
Diluted alcohol, 4 pints.

Make a tincture by displacement.

Oil of roses, 30 drops;
Oil of orange, 50 "
Essence of millefleur, 1 fluid ounce;
Sugar, 2 pounds;
Water, 1 pint.

Triturate the oils and the essence with the sugar, add the water and dissolve without heat. Mix with the tincture before mentioned, and filter through paper.

TOOTH POWDERS.

These generally contain prepared chalk and powdered orris root, combined in various proportions with other substances. In the preparation of dentifrices care must be taken that the ingredients be in a state of fine powder, and that the mixture be complete. This may be accomplished by rubbing them together, either with a spatula, or preferably, in a suitable mortar, until they form an apparently homogeneous powder, and passing this through a very fine seive. An elegant dentifrice may be prepared from the following recipe: Take of

Precipitated carbonate of lime, 3 pounds;
Powdered Orris root, ½ pound;
" Sugar, 1 "
" Cuttle fish bone, 2 ounces;
" Carmine, No. 40, ½ ounce;
Oil of rose, 50 drops;
Essence of jessamine, ½ ounce.

Mix the whole together, and pass through a fine bolting-cloth seive.

ROSE TOOTH POWDER.

Prepared Chalk, 3 pounds;
Powdered Orris root, 4 ounces;
" Rose pink, 4 "
" Sugar, 8 "
Oil of roses, 30 drops. Mix and seive.

ORRIS TOOTH POWDER.

Prepared Chalk, 1 pound;
Powdered Orris root,
" Sugar, each 4 ounces. Mix and seive.

CHARCOAL TOOTH POWDER.

Take of Powdered Peruvian bark,
" Charcoal, of each ½ pound;
" Myrrh,
" Orris root, of each 4 ounces. Mix and seive.

PERUVIAN BARK TOOTH POWDER.

Take of Powdered Peruvian bark, ½ pound;
" Myrrh, 4 ounces;
" Orris root, 6 ounces;
Prepared Chalk, 1 pound;
Oil of neroli, 2 drachms. Mix and seive.

A CASE IN PRACTICE.

BY J. W. VANDEVORT, D. D. S.

Last March a gentleman called to consult me as to the condition of a Mr. G., who, according to his statement, had been suffering most distressing pain for about six weeks, with what the family called diptheria. That the attending physician had pronounced the disease as above stated I am not able to say, but would judge, from a description of the treatment given, that it was altogether foreign to what it should have been.

On visiting Mr. G., I found him very much emaciated, having been unable to take solid food for some four or five weeks, exceedingly nervous, jaws firmly closed, and a fistulous opening immediately at the symphysis; also, an artificial opening on the right side of the ramus of the jaw. The teeth at once were suspected as the cause of the trouble. After considerable difficulty I succeeded in opening the mouth, but it was only accomplished with the aid of an instrument designed for the purpose. His breath was very fetid, gums spongy, two inferior molar teeth on the left side badly decayed, quite loose, and very sore to the touch.

At once recommended the teeth to be extracted, which I accordingly did; but before operating gave him half a gill of brandy. Prescribed the following mouth wash, to be used several times a day, to be diluted with a pint of water:

℞.—Potass. chlo., ʒi.;
Tinct. catechu, *f* ʒss.;
Aqua, *f* ʒij.—*Misce.*

The following week visited Mr. G., found him convalescing rapidly. The swelling had entirely subsided, and he was almost free from pain, with the exception of a little on the right side of his face.

After a thorough examination of his mouth, which was impossible on the first visit, I discovered the roots of a superior molar tooth on the right side, which, on extracting, were found to be much necrosed.

A nourishing diet was recommended, and a short time after the last operation, was quite surprised, one day, to see the gentleman in my office. He said he was feeling first-rate, in fact, never better in his life. To express in his own words, "He felt himself again, and through the science of dentistry, he believed, his life had been saved."

PITTSBURGH, June, 1863.

CLASPS ON RUBBER WORK.

BY EDWARD N. BAILEY, A. M., D. D. S.

It is neither advisable nor desirable in all cases to use atmospheric plates in partial sets, having, as we most frequently do, to consult the convenience, pleasure and *pocket* of the patient for whom such a piece of work is to be made. Many persons at the present time suppose they have a knowledge of dentistry, and they not unfrequently become annoying in their suggestions, and fastidious in their demands.

A full gold plate with three or four teeth attached, few are willing to pay for, at the present rates of premium on precious metals; silver plates many object to, on account of the discoloration and constant scouring necessary to keep them presentable and *palatable;* whilst the extensively advertised and circulated (*coralite*, *vulcanite*) hard rubber base, make the public inquisitive as to its merits and its uses. Demands are made for it in most unfavorable cases, and in still a larger number of unfortunate as well as unfavorable cases, it is *forced in* without regard to adaptability or usefulness.

Now, in many cases, particularly obturators, (to which this work is especially well adapted,) it becomes necessary to attach clasps around some of the teeth for greater support and firmness, or, as before remarked, in such cases as we cannot depend upon, and it is not advisable to use the suction cavity; rubber bands are too clumsy, and only useful on long and straight sided teeth, it therefore alone remains for us to use gold bands or clasps; the proper adjustment of which to the teeth, and attachment to the rubber plate, is of the greatest importance, as we have not the advantage of changing them as in metal work; after having accurately fitted the bands to the plaster teeth desired to be clasped, drill two holes in them at the angles of the teeth, or where the bands bend, solder in each a platina pin, with a well turned head, such as are used in Mr. S. S. White's rubber blocks; so that when the pins are in, they will diverge,

and thus hold the bands firmly as the free ends spring over and around the teeth; if desirable, arrange on a temporary plate, and adjust them to the teeth in the mouth; replace on the plaster cast, and clamp with small cloth tacks driven into the teeth, away from contact with the rubber, the head of the tacks securing the bands immovable, so that when the flask is being drawn together, they will retain their places. If the rubber is packed in the opposite part of the flask, it is better to inclose the pins with rubber also, to avoid any undue strain upon them; and in all such cases, except where a rubber rim is wanted above the teeth to be inserted, it is desirable to retain the teeth on the cast, and so incase them with plaster in the flask, so that they will hold the same relative positions to the bands when done, even if the flasks have not been accurately brought together, and this frequently occurs with the flasks now in general use.

PHILADELPHIA, June, 1863.

COMPARATIVE ANATOMY OF THE TEETH.

BY C. N. PEIRCE, D. D. S.

In the first number of the DENTAL TIMES, it may not be uninteresting to some of its readers to direct attention to the teeth of some of the lower animals, noting the great variety in position, number, durability and density, and contrasting them with those of the human subject. In giving a broad definition applicable to all classes, we cannot better define teeth, than "as hard bodies projecting from the surface of the mucous membrane, and situated in the alimentary canal, anterior to the pyloric orifice of the stomach." In position, we find them occupying this line in every conceivable variety, so as best to subserve the wants of the particular animal, not only on the superior and inferior maxilla, which bound the anterior part of the mouth, as in the mammalia, but also on the bones which bound the posterior orifices, and intermediate positions, such as the palatine, the vomer, and the lingual bones. Indeed, they are found in every position where they will subserve the purposes of nutrition, by either seizing, holding, or masticating the prey, or aid in locomotion, for the purpose of catching it. With regard to number, we find the same great variety. Commencing with some of the lowest species, we find that the dental system is represented by a single tooth, developed on the median line of the palate, in others the single median tooth above is opposed to two dentigerous plates below, while in others the jaws are armed with four teeth, two in each jaw. From these species may be traced every gradation in the progressive multiplication of the teeth, up to those in which the mouth is crowded with almost an indefinite number of these organs.

The durability of individual teeth varies in the different classes of animals. In the crustaceans, the teeth are shed and renewed with the

external skeleton. In reptiles and fishes they are renewed when injured by wear or lost by violence. In the shark tribe new teeth are always forming, while the oldest and most external are being cast off by the absorption of their bases, through which they are attached to the jaw. In the highest class of animals, mammalia, the teeth are but once renewed, those of youth are gradually shed, and as the animal frame approaches maturity, are replaced by a stronger and more extended set, fitted to subserve their purpose during life.

In density, the teeth bear a constant relation to that of the osseous structure, and not only is this true with different classes of animals, but also in the same classes at different periods of life. Take, for instance, the human teeth at eight, or ten years of age, or earlier; with what ease they can be cut with a sharp and well-tempered instrument; contrast this condition with the same teeth some years later in life, under favorable conditions. The additional resistance offered the excavator, proves without doubt, the increased density of the tooth, by the addition of the salts of lime, and reduction of animal matter. Such is also true of the tissue composing the skeleton. "In the class mammalia, the dental and osseous tissues reach their highest point of development and average density, while in the fishes they are lower in organization, and less hard." The ichthyologist complains of the inadequacy of language to portray the singular diversity and beauty, and the interesting physiological relation which are manifest in that part of their organization. The teeth of fishes, whether considered in regard to number, form, substance, structure, situation, or mode of attachment, offer more various and striking modifications than do those of any other class of animals.

Teeth admit of a general classification, based upon their various external forms, and the purposes to which they are adapted. We have the cone-shaped teeth, with sharp points, such as we find in the canine of the carnivora, also the more simple conical teeth of the shark tribe. These teeth interlock with those of the opposing jaw, and are used either for seizing, retaining, or tearing the prey. The condyles of the jaw in which such teeth are implanted, together with the glenoid cavity, are so shaped as to admit of a liberal vertical, or up and down motion, and but a very limited lateral or horizontal one.

Teeth with sharp, chisel-shaped edges, as the incisors of the rodentia, illustrated in the rabbit, rat, beaver and squirrel, also the human incisors —used principally for cutting—form the second class. Teeth for tearing and lacerating, as the molars of the carnivora, closing upon each other like the blades of a pair of scissors. Teeth for crushing, with their masticating surfaces studded with small cusps or cones, as illustrated in the monkey tribe, where the principal food consists of fruits. And teeth for

grinding, with a broad, flat masticating surface, and jaws so articulated as to admit of great lateral motion, afford specimens of the third, fourth and fifth classes. The grinders of the elephant are an excellent example of the latter class—they belong mainly to animals subsisting on grain, which requires to be reduced to powder before its reception by the organs of digestion. "The conical pointed tooth for piercing, and the broad flat tooth for grinding, offer the two extremes in form; and in passing from the one to the other, we may, by examining the teeth of various animals, observe minute gradations in the change from the vertical to the horizontal development, or vice versa." "In all instances we find the jaw beautifully adapted for the most efficient use of the peculiar teeth with which it is armed, so that from a view of the teeth we may predict with certainty what would be the form of articulation of the jaw to which they belonged, and on the other hand, a view of the articulation of the jaw from which the teeth have been lost, will furnish us with means of judging of the form of teeth with which it was supplied."

So intimate are the relations existing between these and the other organs of the structure, that a complete knowledge of the one enables the naturalist to decide upon the habits of the animal, and the order and class to which it belongs.

The shape and arrangement of the human teeth looks much as if man was an omniverous animal, for among them we find the incisors of the rodentia, the canines of the carnivora, and the molars, in a modified form of the graniverous and herbiverous. In the study of comparative anatomy, man gains more extended views of the relation he bears to the different orders of the animal kingdom, also much that might contribute to his health, comfort and happiness. No works have we read with more pleasure and instruction than those on natural history and comparative anatomy, and to the author of Owen's Odontography, are we more indebted than to any other, for the little knowledge we possess on this subject.

DENTAL THERAPEUTICS.

BY GEO. T. BARKER, D. D. S.

The attention of the dental profession, as a body, to this subject has not been extensive, and it almost seems as if the endeavor had been made to cause a few agents which are usually found on the dental case, to perform all the requirements of an extended dental practice. Why this should be the case in our speciality in contradistinction to others, is probably due to the prejudice which has existed, and which is fostered even at this day by some of the most prominent practitioners of our profession. Our Dental Journals not unfrequently contain articles which, from the known character of their writers, are calculated to arrest investigation and retard research

in the field of dental therapeutics. We present, as an example, an extract from one of our recent dental periodicals:

"The great want of success in fang filling and treating abscesses, exposed nerves, or sensitive dentine, is the result of too much 'doctoring,' too much 'treatment,' and when the profession has learned to place more confidence in the recuperative powers of the system, more faith in the *vis medicatrix natura*, and less on nostrums, we shall have achieved a success and our progress will be onwards and upwards."

The object of the writer of the above may have been to discountenance "doctoring" or "treatment" by those unfitted or unlearned, or who use agents without any idea of their properties or effects upon the economy; if so, we can agree with him; but our own view is, that the want of success in fang filling, treating abscesses, exposed nerves, or sensitive dentine, is the result of our want of a correct knowledge of "doctoring" and the absence of the proper "treatment," and until we have, as a profession, gained such knowledge, we cannot hope for the progress predicted. The successful treatment of the dental affections or conditions named, must be preceded by first, a correct knowledge of their pathological relations. Second, by an acquaintance with and application of such therapeutical agents as may tend to alleviate the disease or restore the parts to perfect health.

Let us, as an instance, take one of the most common dental disorders—alveolar abscess—is it not unfortunate for dental science that such writers as Mr. Tomes should, after an able dissertation on the pathology of this disease, in his treatment throw aside therapeutics, and recommend the following:—

"If, however, the inflammatory action has gone on for a day or two, it is probable that suppuration cannot be avoided, especially if the affection has spread to the gum; in that case the tooth should be removed, and the gum, if there is reason to suspect that pus has made its way into it, should be freely incised." *

Dr. Bond, in his recent edition of his work on Dental Medicine, says:

"Sometimes the matter formed within the tooth perforates the alveolus and the gum, and forms a fistulous orifice into the mouth, through which putrid fluids are continually weeping. This is what is called alveolar abscess, and can only be remedied by extraction of the tooth." †

Extracts innumerable might be added to prove that the tendency of much of our literature and teaching is to discourage the application of therapeutical agencies, and to rely only on the recuperative powers of the system or the *forceps*. Now we do claim—*First*. That alveolar abscess is rarely cured through the sole agency of that unknown life-force, to which for want of a better and more comprehensive name we call the *vis medicatrix natura*, but though it does occur in rare instances, it is only

* Tomes' Dental Physiology and Surgery, page 285. Tomes' Dental Surgery, page 563.

† Bond's Dental Medicine, page 95.

where the attending circumstances of age, health, constitution and development are all favorable. *Second.* That because our present knowledge and faith in therapeutical agents and remedial treatment, as a body, is limited, we ought not to pronounce the affection incurable, discourage treatment, and recommend extraction. We have quoted from writers on the subject of alveolar abscess, who have ignored therapeutical agents in the treatment of this pathological condition, justice to our profession demands that we should state that all dental authors and writers do not hold such views. Dr. Taft, in his work on Operative Dentistry, after the presentation of a clear and concise description of the pathology of the disease, with the most approved methods of treatment with therapeutical agents, thus closes his remarks:—

"In regard to the treatment of alveolar abscess, much yet remains to be learned. With the attainments thus far made in this direction, no aspiring dentist will rest satisfied"

Such are our own views, and to stimlate and encourage investigation for the benefit of dental science is the object of the writer, and no field presents greater inducements than the one to which we invite attention. A generous profession remembers with gratitude and perhaps for ages will pay tribute to the memory of Spooner, for his contribution of arsenious acid as an agent for the destruction of the dental pulp; to Morton, a dentist, the first to employ ether in surgery; but who can conceive of the suffering that will be alleviated and of the honor that will justly accrue to him who first presents to notice any agent, harmless to tooth structure, that will destroy the sensitiveness of dentine, and enable us to perform those operations which at present are with many so painful and disagreeable, causing patients in many instances, by their dread of our operations, to sacrifice their teeth by neglect of proper dental attention. And there are other dental disorders which fall, we may say daily into our hands, and which require a knowledge and application of dental therapeutics. Abnormal saliva, either acid or alkaline, which we have reasonable suspicion is acting deleteriously upon tooth structure, conditions of mucous surfaces, induced by inflammation, mineral poisons or other influences, are not uncommon, and should be treated, not by stating to the patient, "You had better purchase a bottle of my Mouth Wash," an article which, however useful in one affection, cannot certainly be expected to be alike useful in all others; but what we do urge is, that abnormal conditions being found to exist, should be treated by prescribing for, and administration of, agents especially indicated by the existing pathological conditions, and that instead of openly or impliedly censuring "Tooth Doctors," or those who aim scientifically to treat teeth, it should be our endeavor to uphold and encourage those who would wrest from other sciences and other fields potent agencies for the alleviation of dental disorders.

PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

The Eighth Annual Session, 1863-1864.

The eighth annual session of the Pennsylvania College of Dental Surgery will commence on the first Monday of November, and continue until the first of March. Preliminary lectures will, however, be delivered each day during the latter half of the month of October, commencing on Monday, the 19th inst. The Dispensary and Laboratory of the College will also be open from that time, where ample opportunities will be afforded for the prosecution of the practical part of the profession under the daily supervision of the Demonstators, who are gentlemen of known integrity and thorough capability. During October, as well as the entire session, a clinical lecture will be delivered, and operations performed by one of the Professors every Saturday afternoon.

The course is so arranged that fifteen lectures are delivered each week, on the various branches taught in the school. A synopsis of the manner in which each department is treated will be found under the head of the different chairs.

These lectures occupy about the average time of three hours each day. In addition, four hours are daily spent by the student in actual practice. With this object in view, the operating rooms are furnished with twenty chairs, so arranged as to command the best light, and all the appliances necessary for comfort and use. To these chairs the students are assigned in classes, and certain hours are fixed for each member of the class to operate.

Each student is required to provide his own instruments, (except those for extracting,) and to operate with them. He is expected to keep them in perfect order, and for that purpose is provided with a table in which they can be locked up when not in use. As the operations performed at the College are entirely gratuitous, a superabundance of patients invariably present themselves.

In the mechanical department every process known in the profession, which has any value to the mechanical dentist, is fully taught; and receipts of valuable compounds are freely imparted. All the conveniences are at hand in the Laboratory for the preparation of metals, manufacture of teeth, (single and in blocks,) mounting, etc.; and the student is required to go through all the necessary manipulations connected with the insertion of artificial teeth—from taking the impression to the thorough construction of the denture, and proper adjustment of it in the mouth of the patient.

In addition to the facilities afforded by the College for a thorough course of instruction in the theory and practice of Dentistry, the celebrated hospitals and clinics of the city constantly enable the student to witness various important surgical operations which are highly interesting and instructive. The medical and surgical clinics of the Blockley Hospital, in particular, one of the largest eleemosynary establishments in the world, are open to Medical and Dental students, free of charge. The staff of this institution is composed of some of the most eminent physicians and surgeons of Philadelphia.

COURSE OF LECTURES.

CHEMISTRY AND METALLURGY.

The course of instruction from this chair will commence with the consideration of the imponderable substances.

The laws that govern the imponderable bodies will next claim attention, with some notice of symbols or chemical notations. Individual elements, and the compounds resulting from their combinations, will then be considered. Organic chemistry will receive its full share of attention.

The course will be illustrated by diagrams and such experiments as can be performed before the class.

DENTAL PHYSIOLOGY AND OPERATIVE DENTISTRY.

The lectures in this department will embrace the Physiological Anatomy of the teeth, general and microscopical, in addition to a minute and careful description of the various operations performed by the dental practitioner.

The microscope, models, and diagrams, will be employed in illustration.

At the Clinic the incumbent of this chair will also demonstrate before the class the various operations described in his course of lectures.

MECHANICAL DENTISTRY.

The instruction from this chair will embrace the entire range of manipulations legitimately connected with the laboratory, arranged in two divisions—Mechanical Dentistry proper, and that to which has been applied the appellation of the Plastic department.

I. *Mechanical dentistry proper* will include everything appertaining to the construction of dental substitutes, passing through the different stages of preparation, from taking the impression, to the completion and proper adjustment of the case in the mouth, conjointly with features, expression of countenance, enunciation, etc. It will likewise embrace the metallurgic treatment of the various metals employed, the preparation of plate and wire, the alloying of gold, together with the *alloys* used, as well as those designated as solders.

II. This division will comprise all that appropriately belongs to the manufacture of porcelain or mineral teeth—single teeth, block work, continuous gum-work, vulcanite, etc. The materials, their preparation, compounds and uses, will be specially regarded.

All new inventions, moifications, and improvements, in this branch of the art, will in place receive due attention and investigation.

PRINCIPLES OF DENTAL SURGERY AND THERAPEUTICS.

The lectures delivered from this chair will embrace General Pathology, Dental Pathology, the Pathological Relations of the Teeth to other parts of the System, together with a minute description of all special diseases that have any relation to Dental Surgery, or of interest to the Dentist.

They will also include a careful examination of therapeutic agents and their general application. Their indications in the medical and surgical treatment of diseases of the mouth, both idiopathic and symptomatic, will be fully illustrated, and also the general hygienic rules and principles which come within the province of the practitioner.

ANATOMY AND PHYSIOLOGY.

The instruction in this department will embrace a plain and comprehensive view of the structure and functions of the Human Economy. The valuable anatomical preparations of the incumbent of this chair, (consisting of Papier Mache manikins, models in wood, drawings, wet and dry preparations,) will enable him to fully illustrate his course. With the same object, vivisections on the lower animals will also be employed.

The special relations of this branch to the wants of the dentist will be kept steadily in view, and such descriptions of the natural history, microscopical structure, connections, &c., of the teeth, as their importance demands, will be given.

The great facilities for the study of practical anatomy, to be found in the city of Philadelphia, obviate the necessity of providing a dissecting-

room in the College. For the usual fee of $10, the student can have access to one of several well-ordered and well-supplied dissecting-rooms.

CONDITIONS OF GRADUATION.

The candidate must be twenty-one years of age, and of good moral character. He must have studied under a private preceptor at least two years, including his course of instruction at the College. Attendance on two full courses of lectures in this institution will be required, but satisfactory evidence of having attended one full course of lectures in any respectable dental or medical school, will be considered equivalent to the first course of lectures in this College: five years' practice, inclusive of the term of pupilage, will also be considered equivalent to the first course of lectures. The candidate for graduation must prepare and defend a thesis upon some subject connected with the theory or practice of dentistry. He must treat thoroughly some patient requiring all the usual dental operations, and bring such patient before the Professor of Operative Dentistry. He must take up at least one artificial case, and after it is completed, bring his patient before the Professor of Mechanical Dentistry. He must prepare a specimen case to be deposited in the College collection. The operations must be performed, and the work in the artificial cases done, at the College building. He must also undergo an examination by the Faculty, when, if found qualified, he shall receive the degree of Doctor of Dental Surgery.

FEES.

Fees for the course, (Demonstrators' tickets included,) - -	$100
Matriculation, (paid but once,) - - - - - - -	5
Diploma fee, - - - - - - - - - - -	30

TEXT BOOKS.

Wilson's, or Leidy's Sharpy and Quain's Anatomy—Carpenter's Physiology, or Dunglison's Human Physiology—United States Dispensatory, (Neil and Smith's Compendium)—Mitchell's Materia Medica—Fownes' Elements of Chemistry—C. J. B. Williams' Principles of Medicine—Wood's Practice—Erichsen's System of Surgery—Tomes' Dental Physiology and Surgery—Harris' Principles and Practice—Taft's Operative Dentistry—Richardson's Mechanical Dentistry, or other standard works on the subject.

DEMONSTRATORS' REPORT.

SESSION 1862–63.

OPERATIVE DEPARTMENT.

772 patients, for whom the following operations were performed:

FILLINGS.

Front Incisors,	206
Lat. Incisors,	110
Cuspidati,	57
Bicuspids,	207
Molars,	508
Treatment and Filling Pulp Cavities,	115
Temporary Fillings,	12
Total,	1215

Of the above there were of

Gold,	634
Tin,	566
Hill's Stopping,	12
Amalgam,	3

Of the operations there were

Superficial Caries Removed,	11
Removal of Salivary Calculi,	46
Pivot Teeth Inserted,	5
Treatment of Inflammation of the Gums,	3
" " " Pituitary Membrane of the Antrum,	1
" Alveolar Abscess,	23
" for Irregularities,	10
" " Partial Necrosis,	5
Extraction of Supernumerary Teeth,	6
" Teeth and Roots,	2061
Total,	3386

JAMES TRUMAN, DEMONSTRATOR.

MECHANICAL DEPARTMENT.

95 patients, for whom the following operations were performed:

Whole Sets of Teeth,	10
Full Upper Sets,	48
" Lower "	3
" Upper " Blocks,	1
" " Continuous Gum Sets,	4
Partial Upper Sets,	43
" Lower "	7
Obturators,	2
Whole number of Teeth Mounted,	1242

EDWARD N. BAILEY, DEMONSTRATOR.

MATRICULANTS.

Session 1862–63.

John B. Young,	N. Providence.
Alex. O'Callaghan,	Cuba.
Charles Degner,	Germany.
Jose Rafael Brunet,	Cuba.
A. O. Street,	New Jersey.
J. H. Hatch,	California.
M. Peralta,	Puerto Rico,
John Hines,	Philadelphia.
W. T. Shannon,	New Jersey.
Alfred T. Goodell,	Philadelphia.
Thos. A. Anderton,	"
J. W. Vandevort,	Pennsylvania.
James Brown,	New York.
George Clark,	Vermont.
Henry Cowie,	Michigan.
A. M. Kern,	Pennsylvania.
Henry H. Winn,	Illinois.
G. T. Underwood,	New York.
R. H. Shoemaker,	Pennsylvania.
C. L. Aspinwall,	Massachusetts.
Silas Griffith,	Philadelphia.
Emery T. Wasgatt,	Maine.
L. Buffett,	Ohio.
G. W. Caldwell,	Philadelphia.
Jules Marcelin,	New York.
Henry C. Spencer,	Rhode Island.
Jas. O. A. Johnson,	New Jersey.
E. L. Parramore,	Virginia.
W. H. Fenney,	Philadelphia.
W. Mitchell,	Ohio.
C. M. Wilkie,	New York.
J. I. Singley,	Delaware.
A. J. Shurtleff,	Massachusetts.
A. S. Miller,	Pennsylvania.
Robt. H. Antis,	New York.
James S. Thomas,	"
Darius Wheeler,	"
Elbert Todd,	"
G. C. Loar,	Illinois.
S. R. Screvin,	Philadelphia.
C. H. Eutujian,	Turkey.

GRADUATES, 1862-63.

John B. Young,	N. P.,	Sensitive Dentine.
Charles Degner,	Germany,	Diseases of the Antrum.
Jose Rafael Brunet,	Cuba,	Circulation.
James H. Hatch,	California,	Caries and its Treatment.
Majin Peralto,	Puerto Rico,	Mechanical Dentistry.
Thomas A. Anderton,	Pa.,	The Teeth.
John W. Vandevort,	Pa.,	Our Profession.
James Brown,	N. Y.,	The Extraction of Teeth.
Charles L. Aspinwall,	Mass.,	The Development, Articulation, &c., of Second Dentition.
Silas Griffith,	Pa.,	Relative Anatomy of the Teeth.
L. Buffett,	Ohio,	Periostitis.
Jules Marcelin,	N. Y.,	Alveolar Odonto Periostitis.
Wm. Mitchell,	Ohio,	Hemorrhage.
C. M. Wilkie,	N. Y.,	The Blood, its Various Properties and Relations.
J. I. Singley,	Del.,	The Mode of Obtaining Impressions of the Superior and Inferior Maxilla.
A. S. Miller,	Pa.,	Dies.
Robt. H. Antis,	N. Y.,	The Physiolgical Anatomy of the Teeth.
Elbert Todd,	N. Y.,	First Dentition.
George C. Loar,	Illinois,	Dental Caries and its Treatment.
C. H. Eutujian,	Turkey,	Caries of the Teeth.

PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

THE EIGHTH ANNUAL SESSION 1863—64.

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THE

DENTAL TIMES.

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ALLOYS OF GOLD.

BY E. WILDMAN, M. D., D. D. S.

(Continued from page 15.)

Pure gold is not employed as a base for artificial teeth, because it is so soft and flexible that in the mouth it would soon lose its shape, and would thereby be rendered useless to the patient. To obviate this defect in the property of gold as a base for artificial dentures, it is alloyed with silver, copper or platinum, either alone or in combination, in sufficient quantity to give it the rigidity and elasticity necessary to resist the force applied to it in mastication, without danger of distortion.

For this purpose, and to this extent alone, should gold be alloyed. Some unscrupulous, persons through cupidity, and others ignorant of the proper quality of alloy to add to the gold, insert plate of sixteen, fourteen, and even as low as twelve carats fine. When this fraud upon the patient is perpetrated by design, the plate is generally covered with a film of pure gold by gilding, which soon wears off in the parts exposed to the attrition of the food, and then the plate becomes blackened and unsightly; and if copper enters the composition of the alloy, the patient will be exposed to the deleterious effects of the salts of that metal.

Gold inserted into the mouth should always possess a sufficient degree of fineness to enable it to resist perfectly the secretions of the mouth in the abnormal, as well as in the healthy condition. The mass of patients, with whom the secretions are healthy, may wear gold of eighteen carats without any material change or detriment to the health. But in many diseases, such as fevers of an inflammatory or a typhoid type, inflammation of the brain, rheumatic and eruptive fevers, inflammation or irritation of the stomach, gout, affections accompanied by derangements of the digestive organs; in mercurial salivation, and in many local and constitutional disorders, the secretions of the mouth almost uniformly change from their alkaline character, and become acrid and acid.

These acrid secretions readily act upon inferior alloys, producing a change of color, or yielding noxious compounds from corrosion, frequently

followed by a train of evils, such as local inflammation of the mucous membrane of the mouth, diseased gums, aphthous ulcers, accompanied by fetid breath, a metallic taste in the mouth, and gastric and nervous derangement, &c. To avoid a liability to such an unfortunate occurrence, it is a better plan never to insert into the mouth gold of a quality below nineteen carats fine; twenty, or as high a standard as the American coin, 21.6 carats, may be used to the advantage of the patient, and also to the satisfaction of the operator, owing to the facility with which it may be adapted to the model, and to the exquisite finish he is enabled to give the work. Owing to the softness of alloys of gold with copper or silver, of a higher standard than 21.6 carats, they are unfit for bases for artificial dentures, and where it is desirable to use gold of a finer quality than the coin, pure gold must be alloyed with platinum.

In alloying gold, the choice of metals, or their combinations for this purpose, is a matter that must be taken into consideration.

Silver, when added even in small proportions, renders the gold paler, forming an alloy harder than either of the pure metals; the color of the alloy is lightened in proportion to the quantity of silver used. When silver alone is used in a small quantity, the color of the alloy is not objectionable, and the gold shields the silver from the action of the secretions and substances taken into the mouth; but when silver is used in excess, it imparts to the alloy a pale, brassy color, and when added in sufficient quantity to reduce the gold below the proper standard to be worn in the mouth, the gold can no longer shield the silver from the acrid secretions and substances acting upon this metal taken into the mouth, and the plate becomes coated with a film of brownish-black color. This contamination of silver in the mouth is generally caused by its union with sulphur, for which it has a powerful affinity, forming a sulphuret of silver; this, although unsightly and unpleasant to the patient, possesses no prejudicial or dangerous properties.

Copper imparts to gold a reddish tint, which is heightened in proportion to the quantity introduced. When used in small quantities, like silver it is protected by the gold; but when added to an excess, whether alone or in combination with silver, the alloy is readily acted upon by the secretions of the mouth, forming deleterious compounds.

Silver and copper are generally used in combination in alloying gold for making plates, for the reason that a better color is maintained in the alloy, the silver softening down the red tint of the copper, while the latter prevents the silver from giving the alloy a brassy hue, at the same time enabling the operator to give the plate a more exquisite finish.

There is a tendency of many metals, when alloyed, to have an increased affinity for oxygen, and the alloy of gold, silver and copper appears to be

of this character; the experiments made by Dr. James Robinson, corroborates this view. He says: "In order to test the relative effects of strong acids on the alloys of gold employed for plates for artificial teeth, the following experiments were made. The acid consisted of two parts of commercial nitric acid with one part of water. 24.47 grains of gold 14 carats fine, alloyed with silver, lost 1.15 grains by the action of the acid. 24.47 grains of gold 14 carats fine, alloyed with copper and silver, lost 8.42 grains. 24 grains of gold 14 carats fine, alloyed with copper alone, lost 4.77 grains.

"These results are of great interest, because they show first, that gold alloyed with one metal, whether it be silver or copper, is less liable to corrosive action than an alloy which consists of the three metals, gold, silver and copper; secondly, that the alloy with silver alone resists the action better than that with copper alone."

These experiments, although conducted with an alloy far inferior to any inserted into the mouth by respectable dentists, show the tendency of the triple compounds of gold, silver and copper, to have a stronger affinity for oxygen, and consequently more liable to corrosion than the binary compounds, and are worthy of note.

Platinum, the third metal used in alloying gold for plate, possesses its advantages and its objections. Alloys of gold with platinum possess the great advantage over those of silver or copper, of being less liable to be acted upon by any corrosive agents secreted in, or taken into the mouth, and being perfectly innoxious to the wearer; another is, that the alloy being harder and more elastic, the plate may be made much thinner than when alloyed with copper or silver, either alone or in combination, yet still possessing sufficient strength and elasticity. The objection to its use is, when a sufficient quantity of platina is added to give gold the required elasticity, the alloy has a dull grayish hue, and is not susceptible of receiving the best finish, giving the plate the appearance of inferior gold. To obviate this objection, copper and silver have been introduced into the combination of gold and platinum. Dr. B. Wood offered to the profession the following formula, which he found to answer the desired requirements of hardness, elasticity, and retaining the natural gold color better than any other that he used, viz:

"45 or 50 parts of pure gold,
2 " silver,
¾ " copper,
¼ " platinum."

Using 45 parts of pure gold, we have an alloy 22.5 carats fine, and 50 parts of pure gold, an alloy 22.64 carats fine. He prepared the alloy as

follows: "Platina, 1 part; copper, 3 parts; silver, 8 parts, (or from 6 to 8 parts.) This forms a very pretty alloy of a bright silver color, with a yellow tinge. It is quite hard, and of a firm, close structure; malleable, and bears a fine polish. With this I alloy the gold to from 21½ to 22½ carats, according to the fineness required, (by adding 2½ or 1½,) as the case may be, to 21½ or 22½ of pure gold."

Dr. Richardson, in his work on Mechanical Dentistry, page 61, gives the following formulas for combining gold, platinum, silver and copper for plates:

"22 dwts. of pure gold,
1 dwt. of fine copper,
18 grs. of silver,
6 grs. platinum."

This furnishes an alloy of twenty-two carats fine, "rich in gold, while it imparts to the plate derived from it a reasonable degree of stiffness and elasticity; preserves in a good degree the characteristic color of fine gold, and does not materially impair its susceptibility of receiving a high polish."

"20 dwts. of gold coin,
6 grs. of copper,
$7\frac{5}{7}$ grs. of platinum."

This formula gives an alloy of twenty-one carats fine. "The amount of gold coin given may be reduced with platinum alone, adding to it eight to twelve grains; in which case, although the carat of the alloy is lowered, its absolute purity remains unaffected, and the plate formed from it will better resist any changes in the mouth than gold coin itself."

The same author, on page 62, gives the following formulas for making an alloy of gold for stays, clasps and metallic pivots, viz:

"20 dwts. of pure gold,	20 dwts. of coin gold,
2 dwts. of fine copper,	8 grs. of fine copper,
1 dwt. of fine silver,	10 grs. of silver,
1 dwt. of platinum.	20 grs. of platinum."

Either of these formulas produces an alloy twenty carats fine.

In alloying gold, it is of the utmost importance that the metals forming the alloy should be uniformly and thoroughly diffused through the whole mass. To neglect this precaution, when platinum is used and not uniformly mixed, where in preponderance it will be liable to form hard points or knots, which will make the alloy unmanageable; and, when copper and silver are used, if not thoroughly diffused, where they are in excess the plate will be harder and more liable to corrosion than the other parts. A

case in point come under my observation a few years since. A lady applied to me, complaining of a brassy taste in her mouth, and soreness of the gums. The mucous membrane, where the plate come in contact with it, was highly inflamed. Upon examining the plate carefully, several bright green spots were found upon the palatine surface; other parts of the plate were bright, and evidently of good quality. These green spots were formed by the corrosion of small particles of copper which had remained uncombined with the gold, and were exerting a poisonous influence upon the patient. Had the alloy been thoroughly incorporated with the gold, this plate was of a quality that it could have been worn without injurious effects to the patient.

The method adopted by Dr. Wood of first melting the platinum and the other alloys together, so as to combine them intimately, will more readily insure their uniform diffusion through the gold. The same plan should be pursued when copper and silver alloys are used. Melt together copper and silver in the proper proportions, cast into an ingot, break up the ingot and re-melt, to insure a thorough mixture of the metals. This alloy may now be forged into a bar, or rolled into plate for future use.

In making alloys of gold, the liability of the metals of different specific gravities to separate or form strata varying in composition must be taken into consideration. This is liable to occur when the alloy is cast in deep ingot moulds, especially when the ingot is so thick as to require considerable time in cooling. To obviate this, it is better to cast in a shallow ingot mould, and, to insure certainty of a complete mixture, cut the ingot into pieces, and re-melt. When the alloy metals have not been previously melted together, this double melting should always be practised; and even when they have, it is safer to melt the alloy twice.

For melting gold, the blast, air furnace or stove may be used. A properly constructed air furnace is preferable to the blast furnace, as in this we dispense with the bellows, and save room, which is an object in the laboratory. A coal stove is not so convenient as a properly constructed furnace, although it is frequently used. Charcoal or coke make a quick, strong heat; anthracite gives a more intense and continued heat, and is advantageous to use when we desire to maintain the heat for a considerable length of time. The objection to its use is, that it generally contains sulphur, which is liable to attack the alloys, especially silver. This objection may be in a measure obviated by allowing the coal to be ignited thoroughly before the metal is placed in the fire.

Ingot moulds may be made of iron, copper or soapstone, and, for temporary purposes, of close-grained charcoal. The closed ingot mould should have sufficient breadth to make an ingot of sufficient thickness to allow repeated forging before it enters the rollers; if deep, it is liable to

the objection before stated. I prefer the open ingot mould, and cast my gold into a bar, and forge repeatedly before it goes to the rollers. The forging compresses the grain of the metal, rendering it of a closer and finer texture. Metallic or soapstone ingot moulds should be smoked or oiled and heated before the metal is poured into them, and care must be taken to allow the presence of no moisture. Black lead, Beaufay's or the Hessian crucible may be employed; the latter is generally used by dentists and jewelers for small meltings. Select a sound crucible; hidden flaws may be detected by the ring, or by grasping it in the hand, holding near the ear; should a crackling sound be heard, reject it, and save the trouble of washing ashes to recover your gold. Prepare the crucible by rubbing the internal surface with borax, so as to give it a thin coating. This fuses into fluid enamel, and facilitates the running down of the metal, and prevents small particles from adhering to the sides of the crucible. Care should be taken not to use an excess of borax before the metal has run down and shielded the bottom of the crucible, as borax has such a strong affinity for the silicious substance of which the crucible is composed, that it would readily destroy its texture, and allow the gold to escape. Place the metal in the crucible, with a small piece of borax on it, and when the metal commences to run down, add borax in sufficient quantity to cover the metal. The borax is readily transformed into a glass, which dissolves any oxide that may be present, rendering the surface of the metals pure and clean, thereby facilitating their union and intimate incorporation. At the proper heat, the glass of borax generally adheres to the sides of the crucible, leaving the metal exposed in the centre. When the metal in the centre is free from bubbling or clouds, and presents a clear, bright appearance, technically termed the *bull's-eye*, it is in a fit condition to pour into the ingot. Should the metal appear cloudy, add a little nitrate of potash, cover up the crucible, and allow it to remain a short time. When the metal has assumed the proper appearance, pour quickly, having the ingot mould near the furnace.

The ingot should now be forged down to the proper thickness for the rolling mill. During this operation the metal must be frequently annealed, and whenever, as in working down an ignot into wire, the edges have to be forged, precaution must be taken after hammering the face, to anneal before operating upon the edge; and vice versa, this same precaution to anneal must be observed in rolling out plate, when the direction through which it has passed the rollers is to be changed. In forging, care must be observed not to draw out the edges, first, while the centre is left thick, as in such case in bringing down the central parts the strain will be so great upon the condensed and hard edges as to cause

them to crack. In working out gold, all the tools should be smooth and free from oxide, and the metal should always be pickled after annealing.

In milling or rolling, where the plate is desired to be of uniform thickness, the rollers should be adjusted equi-distant; in this manner they must be brought up after each passage of the metal between them. They should be brought together gradually, in order not to strain and injure the texture of the metal, and, whenever the metal shows signs of hardness, it should be annealed.

The subject of frequent annealing has engaged some attention; some assert that it injures the texture of the metal. Alloys of different degrees of fusibility will bear different degrees of heat in annealing. The more infusible the alloy, the higher degree of heat it will bear without injury. If the alloy be heated in annealing to a degree that it begins to soften down or sweat, it becomes granular, or like cast metal, and its tough or fibrous character is destroyed; but if the heat is only raised to a sufficient degree to loosen the tension of the particles among themselves, the metal will remain uninjured. For ordinary gold alloys a red heat is sufficient. Blistering is not necessarily produced by frequent annealing; it may occur the first time a plate is annealed. The primary cause is that minute portions of air become inclosed in the mass of the gold in pouring, these globules become condensed and elongated in working out the plate, and when heat is applied, if the expansive force of the air is sufficient to overcome the resistance offered by the lamina of metal covering it, a blister is formed.

The tenacity, elasticity, ductility and hardness of gold, may be improved by its proper treatment in forging and milling; and good sound metal, by improper treatment, may be rendered intractable and full of flaws. Notwithstanding the hardness of metals, or the difficulty of moving the particles among themselves in the solid state, the operation of forging, rolling into plate, or drawing into wire, cannot be performed without a material internal change of the relative position of the component particles; in either of these operations they become condensed, and glide along upon each other's surface to a certain extent without weakening their cohesion. This condensation and gliding of the component particles of the metals has a limit, and if carried beyond this limit, the power of cohesion is overcome, and the metal is rent asunder, or internal flaws or seams occur. But, if the metal is annealed within this limit, its integrity is preserved, and the tension acting among the atoms counteracting the cohesive force is removed, and the metal is restored to a condition suitable for further extension.

DENTIFRICES, &c.

BY CHARLES E. FRANCIS.

In the July number of the TIMES is an article on "Tooth Washes and Dentifrices," with several recipes for each. Such generous contributions are worthy of admiration, and our professional brothers, who are free to communicate the result of their investigations to the benefit of the profession at large, and who, instead of shutting their doors and hearts against their neighbors, are willing to impart instruction to each other, certainly deserve much credit. They set an example, which, were it universally imitated, would tend greatly to elevate the grade of our professional platform, and inaugurate a mutual aid and social element system, the result of which must, in the end, prove much like the "casting of bread upon the waters." I am satisfied that we can all learn from each other, and therefore should cultivate a social intercourse, with a free exchange of thought and sentiment. If we exhibit a generous spirit to others, we call forth from them a similar response. Thus we can labor and co-operate with each other to our mutual advantage.

But to come to our subject. Your contributor truly intimates that it is of great importance that the various articles prepared for the teeth and gums should be of the "best possible kind." Of course no one will deny this. We have then but to ascertain which *are* the best preparations for the purposes indicated. Which are of the greatest benefit, and which the most free from objections? I shall refer more particularly to preparations for keeping the teeth clean. Our patients are recommended to use "tooth powder," that their teeth may be kept free from all extraneous substances; the breath pure, and not tainted by decomposed matter lodged about their interstices. Many persons are prejudiced against the use of dentifrices, fearing that they may prove more injurious than beneficial. That there is some ground for this prejudice, I am fully convinced. There are many subtances in common use for cleansing the teeth, which are decidedly objectionable. Much injury has resulted from the use of acids, and much has been caused by using hard gritty substances. Tooth powder should be pleasant to the taste, that it may be used freely. It should also be as nearly *soluble* as possible. Charcoal, cuttle-fish and pumice-stone are unfit for common use. The harsh, insoluble particles are forced between the teeth and beneath the margin of the gums, forming a base for the deposit of salivary calculus, which, as it concretes, severs the membranous connection. The gums are thus kept in an irritated condition; the alveolar process becomes exposed to the action of destructive fluids, consequently absorption takes place, and the teeth loosen and fall out. I have known instances where particles of charcoal have remained imbedded beneath the surface of the gums for upwards of five years after its use had been

abandoned. *Orris root* and *Peruvian bark* are less objectionable, yet their properties are usually overrated. The latter is unpleasant to the taste. The same may be said of powdered gum *myrrh.* Fine *soap* is good so far as it goes, but used alone has not sufficient body. *Borax* is one of the best ingredients that can be used in forming a dentifrice. It tends to allay irritation of the mucous membrane, and imparts a peculiar sweetness to the mouth. Where an *astringent* is needed, a suitable *wash* should be prepared, adapted to the particular case. Pure precipitated chalk forms a most excellent base for tooth powder. It is entirely soluble in acetic acid. I will give several formulas, quite simple and not very objectionable:

Take of fine old powdered Soap, lbs. ij.;
Precipitated Carb. of Lime, " vj.;
White Sugar, " ij.

Mix, and flavor with the oil of wintergreen.

Take of Prepared Chalk, lbs. iv.:
Powdered Borax,
" White Sugar,
" Rose Pink, āā lbs. iss.

Mix, and flavor with oil of rose or wintergreen.

These may be classed among the soluble powders. The following forms a very agreeable dentifrice:

Take of Prepared Chalk, lbs. iij.;
Powdered Borax,
" Orris root, āā lb. j.;
" Cardamon Seeds, ℥ij.;
" White Sugar, lb. j.—Mix.

If color is desired, add one pound rose pink, and less chalk. Flavor with either oil rose, oil wintergreen, neroli, or jessamine. This is a mere matter of taste.

Tooth powder should be thoroughly triturated in a wedgewood mortar, and finely bolted. The objects of its preparation and use are, to keep the teeth perfectly clean: to neutralize any fermented matter secreted in the interstices; to allay irritation of the gums, and to correct fetid breath. It should be used sufficiently often to keep the mouth in a good condition, even though it be several times a day. Prepared in a simple manner, no fears need be entertained that the teeth will wear out from its frequent use. As it dissolves readily, it must of course be used as dry as possible; and will keep best in well stopped glass jars.

As regards *astringents*, I have less to say. Remedies for a diseased condition of the gums should be varied to suit circumstances. For an

ordinary mouth wash, after teeth have been recently extracted, I use the following:—

℞.—Tincture gallæ, f ʒj;
" myrrh, f ʒvj;
" gualth, f ʒij.—*Misce.*

Dilute with water.

Prof. Barker gives a list of astringents in an excellent article, to be found in the July number of the TIMES. Tannic acid, tinctures of opii and catechu, potassæ chlorate, and borate of soda, are among the best pharmaceutical preparations for unhealthy gums. In some cases more powerful drugs are used, such as iodine and nitrate of silver, and frequently a *systematic* treatment seems necessary to accomplish a proper result.

NEW YORK CITY.

FRACTURES OF LOWER JAW.

BY DR. L. C. WHITING.

Having treated a few cases of fracture of the inferior maxilla since coming to this place, it occurred to me that it might be of some advantage to the younger members of the profession to know the method adopted to hold the parts in place. The first one was broken between the left cuspidati and lateral incisor. The left side of the jaw was crowded inwards, so that it did not articulate with the upper teeth. I made a strong silk thread fast to the left central incisor and left bicuspid; after placing the broken parts in place, the two strings were tied firmly together across the cuspidati and lateral incisor. The lateral incisor being loosened, I wove a string around that and the firm teeth on each side in such a way as to brace it up as well as possible; then took a cast of the teeth and gums, and made a plate of vulcanized rubber to fit the gums on the inside of the mouth, letting it come well towards the points of the teeth, drilling some holes through the plate close to the gums, so as to tie all the teeth fast to the plate. No bandage was used, the bone united smoothly and firmly, the teeth articulating the same as before the accident.

My experience with the bandage has been unsatisfactory. It would stretch enough to be of but little use, or else would crowd the bone out of place. In a case of compound fracture, I took a cast of each part separate, made thin casts, and trimmed them off so as to bring the teeth in their natural position, reset the pieces in fresh plaster, and made a plate the same as in the first case.

Where any of the teeth are gone, so that clasps can be used, I should put them on as additional strength and security. When bandages are required, a plate of this kind prevents the parts being crowded out of place.

EAST SAGINAW, MICH.

SUPERNUMERARY TEETH.

BY JAMES TRUMAN, D. D. S.

In the observation of irregularities, less attention has been paid to this class of abnormal creations than the subject deserves. For, notwithstanding their simple character and still more simple mode of treatment, there are few cases that present themselves which require more careful observation and accurate judgment.

Supernumerary teeth exhibit themselves in two distinct forms, so decidedly different in their character, that it does not seem admissible to class them under one head. We have the perfectly formed teeth developed in the dental arch, resembling so nearly the normal series, that the closest examination cannot detect any difference between them; and the irregular form that present appearances peculiar to themselves. It is therefore necessary, in writing of these distinct classes, to give them separate titles, and I shall adopt Dr. Tomes' nomenclature in considering the *regular* and *irregular* forms as the *supplemental* and *supernumerary*.

The class coming under the former head are, from my observation, very limited. They have been reported as exhibiting themselves as far posteriorly as the molar teeth, but I am satisfied they will be found, almost invariably, ranging with the incisors. Two cases came under my observation, during the last session of the Pennsylvania College, that were remarkable for the regularity and very close resemblance to the permanent teeth. In both these cases the contour of the arch was very perfect, teeth more than ordinarily well developed, both as regards structure and regularity; the supplemental tooth in both cases appearing in line with the superior lateral of the right side; and, as far as examination could detect, equally perfect with the other two laterals. Remedial treatment in either case was unnecessary, the defect being scarcely noticeable. Dr. Tomes mentions having seen several cases of five inferior incisors, and doubtless other practitioners could testify to having met this form of irregularity; but I am compelled to think that the exhibition of supplemental teeth in the arch is of extreme rarity. It is of no uncommon occurrence for the deciduous teeth to drop in the arch in range with the permanent set, but these are so well known and easily distinguished, that no one could hesitate in selecting them from the supplemental tooth.

The *supernumerary teeth* are generally, like the supplemental, found in the anterior part of the mouth, presenting, at times, a very peculiar appearance, and without doubt giving rise to the common belief in a *double row of teeth*. The difficulty in properly determining the character of these teeth has been the cause of many doubts and misgivings among the younger members of the profession, and has often puzzled those in

long practice. I have in my possession a number of these abnormal growths; and while they present a very great variety of form, they agree in many particulars, so that a general idea may be formed of the characteristics of this class, enabling the observer to readily distinguish them from the normal teeth. To render this distinction palpable to the reader is far more difficult. Indeed, any description will probably fail to render clear to the mind of the student the peculiar formations they take upon themselves. The object of this article will be subserved if attention is attracted to these interesting developments, and more attention bestowed upon them than they have heretofore received. A case presented for treatment at the clinic of the Pennsylvania College, that at first view appeared to be two supplemental teeth, entering the mouth posteriorly to the superior incisors. While they remained in place, it was difficult to determine their true character, being deeply imbedded in the mucous tissues of the hard palate. Their forms being so nearly allied, one to the lateral and the other to the cuspidate, that they could readily have been mistaken for supplemental teeth. Upon extraction, they presented the unmistakable characteristics of the supernumerary, but also exhibited some anomalies in general appearance worthy of notice. One was really a double lateral—if I may use the term—connected posteriorly, so that, on turning round, it presented a very fair imitation of a lateral incisor for either side of the arch. The other was not so marked in its resemblance, but still so nearly presented the well-known outlines of the cuspidate as to have been readily mistaken for one. This also had the double appearance, but not as perfect as its fellow. In another case coming under observation, the tooth presented the general character of a lateral incisor with an imperfectly formed cusp posteriorly, but the general inclination to the cone shape—a marked characteristic of all this class of teeth—is preserved in this specimen. Another that I have before me might easily be mistaken in the mouth for a bicuspid, having three small cusps, crown irregular in shape, but in general configuration similar to that class. In one case that presented for treatment at the clinic, two supernumerary teeth were found adjoining the superior wisdom teeth of each side on the buccal surface. The crown of one of these was a wisdom tooth in miniature, while the other resembled a bicuspid. But it would uselessly prolong this article to describe all the different varieties that present themselves. No two that I have ever met with are exactly alike, but, like other abnormal creations, they seem to be out of the pale of law, making their appearance without much regard to time or place. But, notwithstanding their erratic character, they have peculiar features that almost invariably present themselves:

First in order, then, is the before-mentioned tendency to develop into

the cone shape. This is the most striking feature, and will enable any one to immediately detect their true character.

Second. Their irregular shape, resembling nothing exactly in the whole normal teeth.

Third. The enamel line at the junction with the fang is clearly marked, forming an abrupt edge. This is not the case with permanent teeth of the normal set, and would class them more directly with the deciduous, though only in this particular, for they bear no resemblance in any other respect.

Fourth. Their very short, stumpy roots. This is universal; and as far as my observation goes, and that of many writers, they are invariably confined to one fang, and these generally form with the crown a gentle curve, but in one specimen before me the whole tooth is as straight as we usually find the permanent teeth.

The general appearance of supernumerary teeth would indicate that they are formed and grow with the permanent teeth; indeed, there is no reason that I have yet discovered for supposing that they have any connection with the growth of the deciduous set. The structure of the enamel and dentine is very compact, more so than is usually found in the permanant teeth. They are, in consequence, not easily affected by caries. I have seen but one in that condition, and that only in one small spot.

It is scarcely necessary to say that extraction is the only remedy for this class of irregularity. Cases may occur where it would be preferable to allow a supernumerary tooth to remain when found in the arch, rather than remove it, and thereby cause a defect difficult, if not impossible, to regulate; but such must be very rare. They generally present themselves *in* or *outside* of the line of the normal teeth.

To theorize in regard to the causes of these abnormal growths, is not the intention of this short article. I desire it to be suggestive in its character, that, by calling the attention of the profession to these irregular forms, more light may be thrown upon them, and a closer observation in regard to their growth be given them than has heretofore been accorded.

In a generous profession, no exhibition, however small and apparently insignificant, can be passed over with careless indifference. A careful observation of these minor matters is oft-times fraught with more real benefit to the student than long dissertations in theoretical matters that do not reach the practical needs of the beginner.

☞ We have received from Lindsay and Blakiston their catalogue of Medical, Surgical, Dental and Scientific Books. Also, a copy of their Physicians' Visiting List, Diary and Book of Engagements for 1864.

ASTRINGENTS.

(CONTINUED.)

BY GEO. T. BARKER, D. D. S.

The first of the mineral astringents to which we shall direct attention, is the double salt commonly known as Alum; officinal under the name of Alumen, and denominated chemically, from its constituents, the *sulphate of alumïna and potassa.* Alum is used both as an internal and external remedy, in each of which its astringent influence is clearly marked; but it is topically that alum is most used, and particularly in cases of hemorrhage from the mouth or throat; it is also efficient as a styptic in cases of persistent bleeding from the nose. It may be in such cases powdered and snuffed up, or blown into the nostrils, through a quill; or a solution, containing fifteen or twenty grains to the fluid ounce, can be injected up the nostril. When the bleeding takes place from the membrane where it is easily accessible, a pledget of cotton or lint, saturated with the solution, may be passed into the nostril, allowing it to remain until complete closure of the vessel has taken place. The same method has been recommended in cases of bleeding from the socket, after the extraction of a tooth; and, as a remedy always to be found at hand, it may be exceedingly useful; particularly if in conjunction with the astringent solution, constant steady pressure upon a "graduated compress" is made with the closed jaw. Velpeau has found finely powdered alum a very efficient remedy, in a not unfrequent affection of the mouth, which causes intense suffering, besides interfering with mastication. It consists in an abnormal growth, and subsequent inflammation of the gum, around the third molar tooth. The swollen gum overlaps the tooth, the adjacent part of the cheek is hard and swollen, frequently occasioning immobility of the jaws. Burnt alum (*alumen exsiccatum, U. S.*) is considered the most efficient in such cases. Leech bites occasionally are the cause of alarming hemorrhage, leeches having the power of secreting a fluid at the mouth of the wound that prevents contraction of the vessels; these have been treated with the best results with a solution of alum. A saturated solution of alum in warm water should be made and applied to the bleeding wound on a pledget of cotton, and there retained, with a moderate amount of pressure, until closure of the vessel has taken place. Alum has long been employed for the treatment of mercurial ptyalism with the most advantageous results; also in diphtheritis and tonsillitis.

Alum has been found exceedingly useful in arresting inflammation of the mucous membrane, particularly if used directly after the extraction of the teeth; a small piece of alum held in the mouth for a few moments, five or six times daily, will be found of advantage.

The following mouth wash, to be used after the extraction of the teeth, is given by Mr. Fox.

℞.—Alumina, ʒij;
Decoct. Cinchonæ;
Infus. Rosæ, āā f ℥ij;
Fiat Lotis.—*Misce.*

Small quantites of alum have been recommended, from a very early period, as an ingredient in tooth powders and mouth washes.

A solution containing from half an ounce to an ounce of alum in a pint of water, and sweetened with honey, forms a convenient gargle or a mouth wash for the mucous surfaces.

The preparations of lead are occasionally used in dental practice, and will require a brief notice. These preparations accidentally introduced into the system, or when used medicinally, require great care and watchfulness, as when they are continued for a length of time the astringent influence is lost, and is followed by a sedative one; a poisonous condition being established, which presents certain marked phenomena which may possibly, if neglected, result in death.

Painters and others whose business calls them to be present where some of these preparations are used or manufactured, are particularly liable to be affected by lead poisoning; but where any of these agents are used medicinally, the skillful physician will watch for any untoward symptoms, and immediately discontinue the use of the medicine. The first indication of lead poisoning is felt and seen in the mouth, and it is reasonable to suppose that many of these cases will naturally pass first in the hands of the dentist; it is therefore a duty that he owes to himself and his profession to be able to diagnose the difficulty, and if he does not feel it his legitimate duty to treat the patient, he should at least warn the sufferer of the impending danger, and urge appropriate medical treatment.

The first symptoms of lead poisoning are a peculiar sweetish taste; mouth and nostrils dry; a fetid disagreeable breath; urine scanty, with a tendency to costiveness; the stools of a slatish color, giving evidence of diminished biliary and intestinal secretions. The person will also become anæmic and emaciate rapidly; indeed, this symptom usually precedes all others, as it has been stated that "among those who work in lead the emanations of this metal are apt to produce a peculiar cachexia, before the more definite diseases which it gives rise to are developed. Its signs are a loss of flesh, or a flabby state of the muscles; a sickly pallor of the countenence; and judging from the shrunken state of the veins, and discoloration of the skin, anæmia in its most marked degree."—(*Stille's Therapeutics.*) Intestinal and gastric sensations of a painful

character are frequently noticeable; but, perhaps one of the earliest and most universal symptoms of lead poisoning is to be found around the gums and the teeth at their necks. This consists in a blue line, first described by Dr. Henry Barton, in 1834, as "a narrow leaden blue line about one-twentieth part of an inch in width, while the substance of the gum apparently retained its original color and condition." The presence of this line has been, by some pathologists, thought to be due to the chemical combination of one of the consituents of the saliva with the metallic preparation in the tissue, forming the sulphuret of lead. This position seems reasonable, from the fact that the bluish appearance has been discovered in some instances on the mucous surface of the cheeks and lips. With some persons very small quantities of lead will develop symptoms of poisoning, there seeming to be a peculiar idiosyncrasy to the influence of lead preparations. Thus, lead poisoning may be developed from sleeping in a room freshly painted; and it is stated that many cases have occurred from the use of snuff containing the red oxide of lead, or supposed to have become impregnated by being packed in leaden cases. (*Am. Jour. Med. Sci.*, 1857, 406, 542.) Readers of the foreign Dental and Medical Journals will doubtless remember to have seen several cases reported where general debility, and loss of health resulted, and was ascribed, to the use of vulcanized rubber as a base for artificial teeth; the symptoms, if we remember correctly, were many of them identical with that of lead poisoning; and we have thought this difficulty might have been occasioned by the presence of one of the preparations of lead used in the preparation of the gum. We present extracts from an English Patent issued to Stephen Moulton; sealed August 14th, 1851; enrolled February, 1852.

One part of the invention consists in combining gutta percha or caoutchouc, with a mixture of sulphite or hyposulphite of lead or zinc, and submitting the compound to the action of a high degree of heat. The mode of making the compound is to free the gum from its impurities, then take one or more pounds weight of it, or as much as can conveniently be ground or mixed at a time, and add from two ounces to half a pound of the sulphite or the hyposulphite of lead or zinc, and the artificial sulphuret of lead or zinc in about equal proportions of each, together with from two to twelve ounces of Paris white or powdered chalk. This mixture is ground between heated rollers until the materials are thoroughly incorporated. We have every reason to suppose that the above mentioned material, if introduced into the mouth, might prove seriously detrimental to health.

Acetate of lead (*plumbi acetas*, *U. S.*, *Lond.*, *Ed.*, *Dub.*,) is a white salt commonly known under the name of sugar of lead. It is obtained

by acting on thin plates of lead with dilute acetic acid or vinegar. This must be performed in a shallow vessel, so that a part of each plate will, from time to time, be exposed to the action of the atmosphere. The metal, after becoming protoxidized, dissolves in the vinegar, until a saturated solution is formed, which is then evaporated to crystallization. There is another mode of obtaining acetate of lead much more rapidly than the process above mentioned; for a description of which the reader is referred to the U. S. Dispensatory.

Acetate of lead, like most of the other astringents noticed, is used both internally and externally, but it is particularly efficient as a local application for the relief of inflammation, when brought into direct contact with the affected surface. Internally, it is used to arrest hemorrhages, and control morbid discharges. Externally, it is used as an eye wash in ophthalmia, in chronic inflammation of the nasal passages accompanied with purulent discharge, in chronic suppuration of the auditory meatus, in affections of the bowels, and very generally for relief of inflammatory conditions of the skin, and subcutaneous tissue. Acetate of lead is used as a mouth wash, and as a gargle, and has been found particularly useful in the treatment of mercurial salivation; a solution of acetate of lead, in the proportion of two or three grains to the fluid ounce, has been highly recommended. It will most likely cause blackening of the teeth from the cause previously mentioned, viz: the formation of the sulphuret of lead, through the action of the saliva upon the constituents of the salt. This discoloration will not, however, injure the teeth, and will be but temporary, and in many cases hard brushing with a dentifrice, containing tannin, will quickly remove it from the teeth; indeed, it has been stated by Dr. Alexander Smith (*Ed. Med. Jour.*, 1856,) that in cases of distinct lead poisoning, the blue line on the teeth and gum may be absent in those persons who use the tooth brush effectively and with regularity. Its absence does not, therefore, prove that the person is not suffering from the noxious effects of some of the lead preparations.

Acetate of lead has also been used with considerable success in the treatment of aphthous condition of the mouth and fauces, and to prevent the development of inflammation of the tonsils. For either of these purposes a gargle in the proportion of five grains of acetate of lead, dissolved in three or four ounces of water or mucilage, will be found useful. Dr. Wood, in his valuable work on Pharmacology, says, "it should be remembered that this salt is incompatible with certain mucilages, particularly with those of slippery elm and quince seeds, with which it forms precipitates, and thus deprives the liquid of its mucilaginous property. But, with the mucilages of flaxseed and the pith of sassafras, it reacts but

slightly, not sufficiently to impair materially their demulcent properties or to interfere with its own efficiency."

A solution of subacetate of lead, officinal under the name of *liquor plumbi subacetatis*, commonly known as Goulard's Extract, is another of the preparations of lead used somewhat extensively as an external remedy. Its use is indicated in the same diseases as the acetate, its effects being nearly identical; the subacetate is, however, thought by some writers to be more powerful. In conjunction with its properties as an astringent, it possesses those ranking it among the antiphlogistics, anodynes and hæmostatics. It has received, by certain French writers, commendation as a remedy in the treatment of mercurial salivation, by whom it is used in the form of an exceedingly strong solution, a sixth or an eighth part being used in the fluid of which the mouth wash or gargle is composed. A dilute solution of subacetate of lead (*liquor plumbi subacetatis dilutis, U. S.*) is made, and is in general use under the name of lead water; being composed, according to the U. S. Pharmacopœia, of solution of subacetate of lead, *two fluid drachms;* distilled water, *one pint.* Its use is indicated in the treatment of inflammations induced by burns, blisters, sprains, &c; and like the solution of the subacetate is used only as a topical remedy.

There are several other preparations of lead used, however, principally as internal remedies, but as they are not of use in the treatment of any dental affections, we shall pass them over without special notice.

The next agent to which we shall direct attention, is the sulphate of iron, (*ferri sulphatis, U. S.*) commonly known as green vitriol. This salt contains one equivalent of sulphuric acid, one of protoxide of iron, and seven of water; it is usually of a bluish-green color, inodorous, but of of a strong astringent taste. By many therapeutical writers this agent is treated under the head of the mineral tonics; but it is now used principally as an external astringent, either in the form of a powder, or in a strong solution. It has been used for the purpose of arresting passive hemorrhages from mucous surfaces and the nostrils; and as a wash for flabby ulcers that refuse to cicatrize. It has been employed in the treatment of cutaneous eruptions and ophthalmic diseases with considerable success. When used as a solution for the arrest of hemorrhages, or for indolent ulcers, it should contain from fifteen to twenty grains of the salt to the fluid ounce of water.

An astringent solution, of the sulphate of iron, recently introduced under the name of Monsul's salt, will call for a more extended notice. It was first used by M. Monsul, a surgeon in one of the military hospitals of Bourdeaux, and its virtues as a styptic were by him made public. It is inodorous, of a reddish brown color, and of a strong astringent taste. In the hands of the dentist this agent is found to be particularly useful

and efficient, and its styptic qualities are so powerful that he can control and arrest any hemorrhage from the dental tissues, unless the case is one where the blood is deficient in fibrine, constituting the hemorrhagic diathesis; and even in such cases no better styptic could be used. It possesses the valuable property of hastily producing a firm coagulum. For the treatment of bleeding from the nostrils, from the sockets after extraction of teeth, or from a leech-bite, a small pledget of cotton wet with the solution, and held on the bleeding surface, will usually in a few moments arrest the hemorrhage. We have also found it valuable in another direction, in filling approximal cavities; all operators know how liable we are to cause, by a slight slip of the instrument, bleeding from the gum. When such an accident occurs, and before the blood has time to ooze out and destroy the filling we touch the part with a small portion of the solution. In cases where the follicles in the gum, at the neck of the tooth, eliminate an inordinate secretion, tending, by its presence, to impair the adhesiveness of the gold, we use the solution previous to the introduction of the gold, and find it exceedingly useful. In the treatment of aphthous ulcers in the mouth, occasioned by irregularity of plates, bad fitting artificial work, or other mechanical or constitutional influences, we find nothing is of more, or indeed so efficient, as this solution; it being requisite only to touch the ulcer occasionally, and in the majority of cases two or three applications will be all that is necessary.

In a recent conversation with an eminent practitioner of this city, we were told that, being on one occasion called to arrest secondary hemorrhage in a case of hospital gangrene, at one of the United States Army Hospitals, he tried the dry salt, (a product of the solution when evaporated to dryness,) thickly sprinkled over the surface of the gangrenous part. The effect was not only to control the hemorrhage, but to arrest the gangrene, and out of many cases of the same disease treated by himself and others at the hospital, all (we believe) recovered; demonstrating the fact that it is capable of inducing powerful alterative effects on diseased surfaces.

Sulphate of zinc, (*zinci sulphas, U. S.*) like the sulphate of iron, is used as a tonic, and as an astringent. It is exceedingly useful as an external agent, as it possesses an alterative influence in connection with those above named. It induces healthy action on inflamed tissues, by diminishing the calibre of the circulatory vessels, thus arresting the flow of blood. In the treatment of diseased antrum from mucous engorgement, sulphate of zinc has long been used. Mr. Thomas Bell recommended the following formula as an injection in that disease:

℞.—Zinci sulphas, grs. vj.;
Aquæ Rosa, f ℥vj.—*Misce.*

Dr. Wood recommends sulphate of zinc very highly in the treatment of *ulcers* and *pseudo-membranous patches in the mouth and fauces*, and remarks that "wherever the surface of the ulcer is covered with a whitish exudation, whatever may be their duration or size, from the small superficial aphthous ulceration to the obstinate and destructive *cancerum oris*, the solution of sulphate of zinc will, according to my observation, effect a cure." The solution should be applied by means of a camel's-hair pencil, and of the strength of fifteen or twenty grains to the fluid ounce of water.

There are several other mineral agents noted for their astringent influences, but as they have other and more marked characteristics, they will be noticed under other heads.

MATTER AND ITS PROPERTIES.

(CONTINUED.)

BY T. L. BUCKINGHAM, D. D. S.

In the last number of the TIMES an article was published on "Matter and its Properties," the object of the present paper is to continue the subject. There were three properties mentioned, *gravitation*, *adhesion* and *cohesion*, all tending to draw the atoms together. There is another force opposed to these—*repulsion*, which tends to force the atoms apart. This repulsive force is supposed to be *heat*; we know nothing of the real nature of heat. There are two views of its nature, the corpuscular and the undulatory theory. According to the corpuscular theory, heat exists in all bodies in combination with their atoms, forcing them apart, flying off in all directions from hot, and is absorbed by cold bodies. There are many facts going to show that it has a separate existence, compression is one of the most common; whenever a body is compressed into a smaller bulk, heat is given out. If we take a piece of iron and hammer it, the atoms are driven closer together, and the heat is forced out; or, if we compress suddenly air in a syringe, a sufficient amount of heat is produced to set a piece of tinder on fire; in rubbing a match over a sand paper some of the composition is rubbed off, and being compressed between the match and the paper, a sufficient amount of latent heat is forced out to set fire to the rest of the composition on the end of the match. The flint and steel is another familiar illustration; when struck together, the small particles that fly off are so compressed as to become red hot. A very great number of illustrations might be given to confirm the theory that heat has a separate existence. But there are as many, if not more, going to show it is produced by motion, which is called the undulatory theory.

This theory is explained by supposing that all space is pervaded by a highly elastic fluid called *ether*. The molecules of a hot body set this

ether in motion, as the air is set in motion, when sound is produced. Friction appears to confirm this theory; any amount of heat may be produced by it. Count Rumford "made a borer to revolve in a cylinder of brass, partially bored, thirty-two times in a minute. The cylinder was enclosed in a box containing 18 pounds of water, the temperature was at first 60°, but rose in an hour to 170°, and in two hours and a half the water boiled." Sir Humphrey Davy, "by friction, extracted heat from two pieces of ice, and quickly melted them, in a room cooled below the freezing point, by rubbing them against each other."

"There are six sources from which heat is derived. 1. The sun and fixed stars. 2. The interior of the earth. 3. Electricity. 4. Chemical action. 5. Mechanical action. 6. Vital action."

From the sun is received more heat than from any other source. The sun is the largest body with which we are acquainted; some of the stars may be larger, but we have not yet been able to measure the distance they are from us, much less their size. The distance of the sun from us is 95,000,000 of miles, its diameter is about 888,000 miles, nearly 111 times that of the earth; it would, therefore, make 1,400,000 bodies as large as our earth. There have been two theories entertained in regard to the heat of the sun; one was that the sun is an intensely hot mass, and heat and light is thrown off, as it would be from any other hot body. the other is, that "heat is merely an *affection, or state of an etherial fluid*, which occupies all space."

The quantity of heat received from the sun annually, it has been estimated, would melt a crust of ice on the earth's surface 101 feet thick. There is about four-fifths as much heat received from the fixed stars; so that, although the sun is the great source of heat, the stars give us nearly as much.

The highest natural temperature reccorded, is by Dr. Smith, near the site of the ancient Ninevah, where the thermometer rose to 146° F. The lowest temperature observed by Dr. Kane was—69.3° F. Captain Black has recorded it as low as —70° F.: here is a range of temperature of 206°. We often have a difference in this latitude of from 100 to 110 degrees. The heat from the sun is absorbed by the earth, but it does not penetrate more than from 50 to 100 feet below the surface; as we descend into the earth it becomes cooler, until we get to what is ("called the first stratum of invariable temperature,") as we descend below that, the temperature rises about one degree for every fifty feet; observations have been made in mines and artesian wells to the depth of 2,200 feet, and this increase of temperature has been invariably found. If this ratio continues at the depth of two miles, water would be converted into steam; at four miles, tin would melt; at twenty-five miles, nearly all the metals would be

in a fluid state. Although there is supposed to be such intense heat in the interior of the earth, it is calculated it would not raise the temperature $\frac{1}{30}$ of a degree at the surface, the crust of the earth being such a bad conductor.

Electricity produces heat, but in what manner the heat is produced we do not know, the greatest known heat is in the galvanic current.

Chemical action is a source of heat; scarcely any combination takes place between two elements without causing a change in the temperature. When strong sulphuric acid is poured into water, heat is evolved; when ice and salt are mixed together, the ice melts very rapidly, and the temperature falls, causing a degree of cold much below the temperature of the snow or salt before they were mixed.

Mechanical action produces heat by friction, compression and percussion. The amount of heat produced by friction, in Count Rumford's experiment, has already been given. Many other experiments might be given, to show that the friction of solid substances produces heat; but the fact is so well known, that it is not necessary to state them here. It was supposed, until recently, that the friction of fluids would not produce heat. Mr. J. P. Joule, of Manchester, England, has shown that heat can be produced by the friction of water and of oil, and has also determined the amount of mechanical power necessary to produce a given degree of heat. To record his experiments here, would take up more space than we can give in this article.

Compression usually causes heat; whenever a substance is reduced in volume, heat is given out. If we hammer a piece of cold iron, it becomes hot; fluids and gases also become hot by condensation. Percussion is a combination of friction and compression. Whenever a substance is struck hard enough to drive the atoms closer together, the friction and condensation cause heat.

Vital action causes heat both in animals and vegetables. It is supposed that the chemical combinations going on in organized beings produce most if not all the heat.

TO BE CONTINUED.

QUACK ADVERTISEMENTS.

BY JNO. W. VANDEVORT, D. D. S.

The prevalence of quack advertisements, particularly in reference to the practice of dentistry, have, since the introduction of the vulcanite or corolite material, grown to an alarming extent. Scarcely a newspaper published throughout the country, but bears me out in the testimony. Select a journal where you will, one of the first things that meets the eye is some flaming advertisement, stating Dr. So and So will do such and such work, at greatly reduced prices, all operations being performed

without pain; followed by a long list of references more than likely imaginary, or copied from some city directory.

There are always a set of imposters, or would-be dentists, who have recourse to printer's ink (the devil of course has something to do with it) to bring themselves into notice; for if they depended upon merit, on which the true professional man solely relies, their hopes would never be realized; but, unfortunately for the people, their flaming advertisements inveigle persons who are not educated to a proper appreciation of dental operations until, alas!! too late. Now, if their pockets alone were the sufferers, there would not be the same cause of complaint; but, unfortunately for the poor victim, he or she may have received a permanent injury, perhaps a constitutional one, which may not at once be developed; but, nevertheless, will sooner or later appear, when possibly past all remedy.

If the public could only understand the difference between a good and bad operation in dentistry, they would certainly pay more attention to their teeth: they would at once see the value and importance of seeking the best operator, whose merit has gained him reputation, and on whom they can rely, and rest assured that what operations are performed are done in the most thorough and practical manner; and not the miserable *quack*, whose pockets are freely bled by the job-printer and sign-painter to make himself known, whose operations are not only a disgrace to himself, but to the science of dentistry.

There are a class of these self-styled Drs., who have never spent an hour of preparatory study to fit themselves for the noble profession of dentistry, who spread out their signs and herald forth their advertisements, as for example:

"DR. ————, DENTIST,

"Has fitted up his rooms, especially adapted to the manufacture of artificial teeth, or vulcanized rubber plates.

"While we are prepared to do all work pertaining to our profession, both in repairing diseased teeth and making *new ones*, we would call the especial attention of those requiring *new* teeth, to the superiority of vulcanized rubber over silver, gold, or platinum. This is conceded both by the dentist and by those who wear it. It has been in use for nearly ten years, and we have yet to see the first dentist abandon its use, or the first one who used a plate of it that does not prefer it to gold.

"LIST OF PRICES.

"Teeth extracted without pain by a safe and pleasant process for 25 cents, and a number at a lower rate.

"Extracting gratis, where artificial teeth are to be inserted. Cleaning teeth, 25 cents; gold fillings, 50 cents; other fillings, 25 cents.

"Artificial teeth inserted at the following prices:

"Full sets on vulcanite, $8, (with beautiful gums.) Full sets on gold, $30; full sets on silver, $12. Partial sets at the same reduced rates.

"All operations warranted for five years, and the very best of references given if required. Responsible persons have the privilege of testing work and knowing that it will please them, before paying for it.

"Call and examine my specimens, which are superior in quality, style and finish, to any made in the country.

"N. B. Boarding provided free of charge to those from a distance while having their work done."

It will be unnecessary to make any comments on the above, as it speaks for itself; but we may say it is a fair specimen of what may be seen in almost every paper published throughout the country. Now this modern system of advertising undoubtedly has a very derogatory effect on the profession of dentistry; and it being true, is it not a duty that all true men, not only in the dental, but in the medical profession, owe to society which has entrusted its health and happiness to their care to protect, and wage incessant war against these would-be dentists, or, to use a better word, vampires of society?

PITTSBURG, PA.

NEW BOOKS.

BY C. N. PEIRCE, D. D. S.

We have received from LINDSEY & BLAKISTON the advanced sheets of the eighth revised and enlarged edition of "Harris' Principles and Practice of Dental Surgery." We are pleased to find added to the work an interesting and valuable chapter on the "Application of Vulcanized Rubber to Dental Purposes," from the pen of Professor AUSTEN, of Baltimore. Also, an article from Dr. W. H. DWINELLE, of New York city, giving a full, complete and highly interesting account of Dr. Norman W. Kingsley's method of preparing artificial palate, velum and uvula of elastic vulcanized rubber. Professor Harris' work has long been considered indispensable to the dentists' library; but, by the addition of so much interesting and valuable matter, the forthcoming edition is made doubly so, and to the publishers the thanks of the profession are due for their studied efforts to increase its value as a text book. The work, as it is presented to the dental public, will contain some two hundred and sixty illustrations, which, beside adding much to its beauty, make it more efficient as a source of instruction. Of Dr. KINGSLEY, for his untiring efforts in this specialty of our profession, uniting, as he has done, experience, inventive genius and perseverance, too much could not be said; but we forbear, and invite all to purchase the book and read the article in question; considering well the facts therein stated, let them prove a stepping-stone to the high position our profession is destined to attain. We learn that a new edition of Harris' Dictionary is also in progress, and will soon be ready for the student.

IMMOBILITY OF THE JAW.

BY C. N. PEIRCE, D. D. S.

Some weeks since, a young man called at my office complaining of slight immobility of jaw, with his face somewhat distorted by the contraction of the muscles on the right side. We examined his mouth, and found the right inferior wisdom tooth partially developed, with a dense elastic tissue lying over the buccal and a large part of the masticating surface, with slight inflammation extending into the cheek. With a sharp lance the tissue was removed from the masticating surface, and the patient directed to use an astringent wash, and bathe externally with tincture of arnica. The next day he was much improved, and at the expiration of forty-eight hours the inconvenience was entirely removed. We mention this case to show the necessity, in disturbances of the kind, of looking for a local cause before attributing it to a constitutional disorder. The young man had before, at the suggestion of a friend, consulted a practicing physician, by whom the trouble was attributed to the liver, and some agent prescribed for the purpose of stimulating that organ, which advice was not followed, and had it been, would have done no good while the cause remained.

MINERAL AND OSSEOUS PHOSPHATES.

BY J. L. PEIRCE, M. D.

On perusing the interesting remarks on "Phosphates in Dental Hygiene," by Edward Parrish, published in the first number of the DENTAL TIMES, I felt a desire to add a few words thereto, which may prevent disappointment in the use of that valuable class of medicines.

In former years physicians frequently found that their prescriptions containing phosphate of lime were inert, while at other times all of the efficacy expected from them was fully realized. The circumstance was considered "mysterious," as long as the cause was unknown. At length the mystery was partially removed, by the discovery that although the chemical composition of the *mineral* phosphate of lime and of the *osseous* phosphate of lime appeared to be identical, yet their effects upon the constitution, when internally administered, were very dissimilar; the *mineral* being *inert*, and the *bony efficacious*. The question naturally arises, why this difference? The only answer we can suggest is the probability that the osseous phosphates are soluble in the digestive fluids, while the mineral phosphates are not at all, or but slightly so.

Another idea may be here suggested, viz., between the mineral phosphates and the human system there is but little assimilation. The more any article passes from the lower to the higher organizations, the more capable it becomes of assimilating with the higher. This may be illus-

trated by the carbonate of lime. That article, in the form of oyster shells, when burnt, makes a better fertilizer for the land than when prepared from the mineral carbonate of lime, and our Pharmacopœia, for the same reason, direct medicines to be prepared from the oyster shells, instead of from the mineral. Again, manure made from clover is more efficacious than the same article made from weeds and vegetables indiscriminately; hence, in some portions of our country, the farmers arrange the succession of their crops so that every fourth or fifth year they, instead of cutting and making hay from their clover crop, find it more advantageous to plow it deeply under the soil, and let the land rest during that year. Many farmers also have learned to make their composts of such articles as contain the chemical constituents of the crops they expect to raise the succeeding year, upon the land they design manuring with the said compost. We therefore perceive that the doctrine of assimilation is becoming more investigated and better understood in vegetable as well as animal life, and its influence upon the animal economy must claim the attention of the medical and dental professions.

MAXILLARY PERIOSTITIS.

BY E. HARVEY, M. D.

Having frequently tested the remedy recommended in the following extract from Watson's Lectures on Practice, and always with the most satisfactory results, I think it may not be amiss to call the attention of dental surgeons to it. I cannot agree, however, with that part of the statement which says, "If the pain does not yield after four doses, you may cease to expect any benefit from it." In one case which had existed for two weeks, I gave the remedy for four days before the disease yielded, which it then did quite rapidly and completely.

"There is a kind of face-ache which cannot properly be reckoned as neuralgia, for it does not occur in short, stabbing paroxysms, nor is the pain acute enough to entitle it to the name of tic douloureux; but which is very common, very distressing, and, under ordinary treatment, sometimes very intractable. It is called by some a rheumatic pain; it occupies the lower part of the face, the jaw principally, and the patient cannot tell you exactly the whereabouts it is most intense. It is often thought to proceed from toothache, and bad or suspected teeth are extracted, but with no good effect. Now I allude to this, for the sake of saying that some years ago I was instructed by an experienced old apothecary that this face-ache might be almost always and speedily cured by the muriate of ammonia—a medicine that we seldom give internally here, (England,) although it is so much used in Germany. And I have again and again

availed myself of this hint, and been much thanked by my patients for the good I did them with this muriate of ammonia. It does not *always* succeed, but it *often* does. It should be given in half-drachm doses, dissolved in water, or in almost any vehicle, three or four times a day. If the pain does not yield after four doses, you may cease to expect any benefit from it. In two or three instances of a similar kind that I have recently had to treat, I have found the iodide of potassium, in doses of five or six grains, work a speedy and permanent cure. This induces me to suppose that the pain in some of these cases is periosteal. I so judge from the ascertained efficacy of the iodide in other periosteal affections attended by pain."

CHESTER, PA.

PROCEEDINGS OF THE AMERICAN DENTAL ASSOCIATION AND CONVENTION.

BY C. N. PEIRCE, D. D. S.

A report of the proceedings of these two gatherings, we deem well worthy of a perusal, and should take great pleasure in giving place to them in our Journal, were it not that our space is so limited that we should not have room to do justice to either; shall therefore have to content ourselves with but a meagre synopsis, including organization of meetings, subjects discussed, appointment of committees, &c., and refer our readers to the monthly journals for a more extended report, which we think would well repay the time spent in reading.

The American Dental Association met at the Assembly Buildings, in Philadelphia, at 12 o'clock, on Tuesday, July 28th, 1863, and was organized by Dr. Geo. Watt acting as President, and Dr. J. Taft as Secretary.

The Committee of Arrangements then received and examined the credentials of the delegates, after which they paid their dues, signed the Constitution, and became members of the Association.

The following Associations were represented by their respective delegates:

Michigan State Dental Association	3	Delegates.
Brooklyn Dental Association	7	"
Pittsburg Dental Association, Pa	2	"
Central New York Dental Association	5	"
Northern Ohio Dental Association	3	"
Cincinnati Dental Association	2	"
Mississippi Valley Association	1	Delegate.
New York Society of Dental Surgeons	2	Delegates.
Pennsylvania Association of Dental Surgeons	4	"

Odontographic Society of Pennsylvania..... 6 Delegates.
Pennsylvania College of Dental Surgery..... 1 Delegate.
Philadelphia Dental College..... 1 "
Western Dental Society, Missouri..... 1 "
Permanent members present, 14.

The election of officers being next in order, a special Committee, consisting of one representative from each delegation present, retired, to present nominees for the various offices. Adjourned to four o'clock, P. M.

On reassembling in the afternoon, the Nominating Committee presented the names of candidates, and, upon balloting, the following officers were unanimously elected to officiate during the ensuing term:

President—Dr. W. H. Allen, of New York City.
First Vice-President—Dr. J. H. McQuillen, of Philadelphia.
Second Vice-President—Dr. Wm. B. Hurd, of Brooklyn, N. Y.
Recording Secretary—Dr. J. Taft, of Cincinnati, Ohio.
Corresponding Secretary—Dr. C. R. Butler, of Cleveland, Ohio.
Treasurer—Dr. A. C. Hawes, of New York City.

The President elect, on being conducted to the chair by Drs. Spalding and McQuillen, made a few pertinent remarks.

Dr. Watt, on retiring from the chair, delivered an appropriate and interesting address.

On motion of Dr. Francis, of New York, a vote of thanks was tendered the retiring officers.

The minutes of the preceding annual meeting were read by the Secretary, and adopted.

The report of the Committee on Dental Physiology was then presented, and read by Dr. Atkinson. It was a very interesting paper, and elicited considerable discussion, participated in by many of the members present; profitably occupying all of the morning of the second day.

Afternoon session of the second day—Called to order at four o'clock.

The Report of the Publication Committee was presented, and received.

On motion of Dr. Spalding, the price of the three years' Transactions, combined, was fixed at three dollars.

The Committee on Mechanical Dentistry had no report; but in connection with this subject Dr. C. Palmer made some interesting remarks, and exhibited some models illustrating his method of preserving the contour of the face, by means of rubber. The subject called forth an expression from several members.

The report of the Committee on Dental Pathology and Surgery was presented by Dr. Atkinson. It contained much that was of value to the dental practitioner. In connection with it he gave the history of some very interesting cases of necrosis which he had treated in New York city.

In the discussion of this paper, which was participated in by a number of gentlemen, much ability was displayed, and an incentive given to this specialty which, we trust, will be productive of good results.

Upon motion, the regular order of business was suspended, for the purpose of selecting some place for the next annual gathering; whereupon Niagara Falls was unanimously chosen.

On resuming the order of business, the Nominating Committee made the following report, which was adopted:

Committee of Arrangements—Drs. S. B. Palmer, C. Harris, S. G. Martin.

Committee on Publication—Drs. J. Taft, W. A. Pease, C. W. Spalding, H. R. Smith, H. A. Smith.

Committee on Prize Essays—Drs. S. Dillingham, G. T. Barker, G. W. Ellis, A. C. Hawes, W. B. Hurd.

Committee on Dental Physiology—Drs. C. A. Kingsbury, J. H. McQuillen, C. N. Peirce.

Committee on Dental Chemistry—Drs. George Watt, T. L. Buckingham, H. A. Smith.

Committee on Dental Pathology and Surgery—Drs. W. H. Atkinson, J. F. Flagg, J. L. Suesserott, C. R. Butler, C. P. Fitch.

Committee on Mechanical Dentistry—Drs. Thos. Wardell, J. G. Cameron, A. W. Allen, S. G. Martin, E. M. Skinner.

Committee on Dental Education—Drs. J. H. McQuillen, J. Taft, H. R. Smith.

Committee on Dental Literature—Drs. C. P. Fitch, W. H. Allen, J. F. Johnston.

The report of the Committee on Dental Literature was read by Dr. McQuillen; that of the Committee on Dental Education by Dr. Ellis, and on the Formation of Local Societies, by Dr. Taft.

After which the following interesting papers were read, and well received by the Association:—On "Professional Education," by Dr. Flagg; on "Dental Education," from Dr. Latimer, read by Dr. Fitch; on "The Extraction of Teeth," by Dr. Ellis; on "Irregularity," by Dr. Allen; on "Exposed Pulps and Alveolar Abscess," from Dr. Hawes, read by Dr. Flagg; on "Institutes of Dental Science," by Dr. Atkinson.

The following resolution, offered by Dr. McQuillen, elicited considerable discussion, and was finally adopted:

Resolved, That a committee of five be appointed by this Association to confer with Surgeon-General Hammond relative to the appointment of dentists to the military hospitals of the United States, and also to secure, if possible, prompt and successful action on the part of Congress, by

having petitions prepared, signed, and sent to that body from all parts of the country in favor of the measure.

The Chair appointed the following gentlemen upon the committee, Drs. McQuillen, Spalding, Taft, Fitch and Wadsworth.

Dr. Palmer read a very interesting paper which, with those previously read, was referred to the Publication Committee; he also exhibited some beautiful instruments of his own manufacture, intended for the preparation and filling of fangs.

The Treasurer's report was presented, showing a balance in his hands after defraying all the expenses of the session. Other business of minor importance having been transacted, the President, Dr. Allen, made a few appropriate remarks, after which the American Dental Association closed its proceedings on the evening of the fourth day's session, to meet again at Niagara Falls, on Tuesday, July 26th, 1864.

THE AMERICAN DENTAL CONVENTION.

The American Dental Convention met at White's Hall, Saratoga Springs, New York, on Tuesday, August 4th, 1863, and was organized by Dr. W. B. Roberts acting as President pro tem. Drs. Buckingham and Robins reported the sum of one dollar as the individual assessment necessary for the creation of a fund sufficient to defray the expenses of the session. Gentlemen present from the following States paid the required amount, signed the constitution, and became members of the Convention: New York, 54; Massachusetts, 11; Connecticut, 9; Pennsylvania, 7; Ohio, 7; Vermont, 5; New Hampshire, 2; New Jersey, 2; Michigan, 2; Delaware 1; Rhode Island, 1; Wisconsin, 1.

The Executive Committee appointed in 1863, reported the following subjects for discussion, which were adopted:

I. Causes influencing an abnormal development of the teeth.

II. Treatment of dental irregularities, and appliances for the same.

III. 1. Filling teeth. 2. Filling temporary teeth. 3. Best material for the same.

IV. Diseases of the antrum, and treatment.

V. Treatment of cleft palate.

VI. Alveolar abscess.

VII. Mechanical dentistry.

VIII. Miscellaneous business.

W. H. Dwinelle, W. A. Pease, W. D. Stone, D. W. Perkins, T. L. Buckingham, *Committee.*

The minutes of the preceding session were then read by the Secretary, Dr. Searle, and, upon motion, adopted. The reports of officers and com-

mittees were declared in order. The Treasurer then made the following statement:

Receipts of last year	$119 77
Disbursements	57 08
Balance	$62 69

Upon motion of Dr. Rogers, Mr. F. H. Norton was appointed to furnish the Saratoga press with a daily account of its proceedings, at an expense not exceeding fifteen dollars.

After considerable discussion, the Convention, upon motion of Dr. Whitney, amended by Dr. Atkinson, decided to hold two daily sessions, from 9, A. M., to 1½, P. M., and from 4 to 6, P. M.

The election of officers for the ensuing year being next in order, the Chair appointed as tellers Drs. Buckingham and Kingsley. The following gentlemen were then, upon separate ballot, unanimously elected to serve the Convention.

President—Dr. J. Taft, Cincinnati, Ohio. *Vice-President*—Dr. W. W. Sheffield, New London, Conn. *Corresponding Secretary*—Dr. W. H. Atkinson, New York City. *Recording Secretary*—Dr. C. N. Peirce, Philadelphia, Pa. *Treasurer*—Dr. A. C. Hawes, New York City.

The Convention then adjourned to meet at 4 o'clock, P. M.

The meeting was called to order at 4 o'clock, when a letter was read from Dr. Westcott, the retiring President; he regretted his inability to be present, and spoke of the importance of associated effort in contributing to the advancement of dental science. Essays being next in order, Dr. Sylvester read a very interesting paper upon "Causes Influencing an Abnormal Development of the Teeth." The subject was treated under the following heads:—1. Parental influence. 2. Gestatory influence. 3. Improper diet. 4. Impure air. 5. Want of exercise. It elicited considerable discussion, in which many members participated. Adjourned.

The meeting was called to order on the morning of the second day by the Vice-President, Dr. Sheffield. The minutes of the previous meeting were read and adopted, when the following resolution, offered by Dr. W. B. Roberts, was voted upon, and carried.

Resolved, That the Chair appoint a committee of five to make proper arrangements for observing the day of Thanksgiving appointed by the President of the United States.

Drs. Roberts, Rogers, Kingsley, Watt and Atkinson, were such committee.

The report of the Committee on the Introduction of Dentists into the Army, was made by Dr. Atkinson, when Dr. Buckingham moved the

reappointment of a committee on this subject. The Chair appointed as that committee Drs. S. S. White, B. T. Whitney and Geo. Watt.

The "Treatment of Irregularities, and Appliances for the Same," was declared the subject in order for discussion, when Dr. Kingsley, of New York, spoke of the unprofitable waste of time, labor and expense, in the use of any complicated apparatus, giving and illustrating his method by diagrams on the blackboard. He was followed by a number of gentlemen, all of whom gave definite ideas of their method.

Afternoon session of the second day. Called to order at 4 o'clock, when Dr. Wood read a paper on "Fusible Metal Fillings;" he also exhibited his instruments, and demonstrated the method of manipulating his plastic filling; the subject called forth remarks from a number of gentlemen, occupying a large part of the session.

Morning session of the third day. The President, Dr. Taft, in the chair. In accordance with a resolution adopted the previous day, the early part of the session was devoted to exercises consistent with the Proclamation of the President of the United States; they were highly interesting and filled with a spirit of pure patriotism, and a desire that our present unhappy National condition might be brought to a speedy termination, on the sure foundation of justice to *all men*.

The regular order of business was resumed at 10½ o'clock, when the minutes of the previous meeting were read and approved.

The President announced the following gentlemen as constituting the Executive Committee for the ensuing year: Drs. L. W. Rogers, A. W. Kingsley, J. A. Watling, A. Hill and H. A. Smith.

The consideration of "Cleft Palate" was then declared the next order of business. The discussion was opened by Dr. Atkinson, who said the causes might be either dynamical, chemical or mechanical. He spoke favorably of the surgical operation as a means of correcting it. Dr. N. W. Kingsley was the next speaker; he explained the difference between voice and speech—the former being natural, the latter acquired; and spoke at length on the advantages of elastic vulcanized rubber for artificial palate and velum, illustrating his remarks by the exhibition of several beautiful models, duplicates of those placed in the mouth. He was followed by others, the subject occupying the Convention until near the hour of adjournment.

The following resolution, offered by Dr. Hawes, and amended by Dr. O. E. Hill, was adopted:

Resolved, That a vote of thanks be tendered to Dr. Kingsley, for the very interesting and valuable description of his method of treating cleft palate, and that to him is due the honor of first making a perfectly practical artificial velum.

Afternoon session of the third day. Called to order at four o'clock.

Dr. C. Palmer gave an interesting description of the manner of using his instrument for removing pulps and filling fangs.

Next in order were the "Diseases of the Antrum and Treatment." The discussion was participated in by Dr. Atkinson and others, and was interesting and instructive.

Nitrous Oxide Gas was, upon motion, aken up for consideration. Drs. J. Allen, Searle, S. S. White and others participated in the discussion.

Dr. W. B. Roberts offered the following, which was carried with but little discussion:

Whereas, This Association, having for its object the elevation and advancement of our science, desire on all occasions to recognize, endorse and to give encouragement to those of our number who contribute most largely to the progress and perfection of our noble art; *and whereas*, Dr. Norman W. Kingsley has this day presented and demonstrated to this Convention his peculiar method of restoring artificially the lost palate and velum, in a manner so clear and comprehensive as to entitle him to a substantial testimonial from this Convention; therefore,

Resolved, That this Convention present to Dr. Kingsley a gold medal, as an expression of their high appreciation of his valuable contribution to our profession.

Resolved, That a committee of five be appointed by the chair to carry out the object of this resolution, with power to draw upon the Treasurer for that purpose for an amount not exceeding fifty dollars.

The following gentlemen were announced by the President as a committee to carry out the above resolutions:—Drs. W. B. Roberts, A. C. Hawes, J. Allen, W. H. Atkinson and W. H. Dwinelle.

Morning session of the fourth day. Called to order at 9 o'clock. The minutes of previous meeting were read and adopted.

The next subject for discussion was "Alveolar Abscess." Drs. Atkinson, Dwinelle, and others, spoke at length.

"Mechanical Dentistry" being the next order of business, the discussion upon it was participated in by many members, and much interest manifested.

Under the head of miscellaneous business, Dr. Atkinson read two papers, one upon "Anomalous Cases," the other upon "Causes Retarding Dental Progress."

The place for holding the next Convention was fixed, in one of the earlier sessions, at Philadelphia, but, upon motion, was reconsidered, and after many efforts and much discussion, *Detroit* was selected, where it will reassemble on Tuesday, August 2d, 1864.

The President then delivered a very interesting and instructive address, after which the Convention *adjourned*.

ANNOUNCEMENT
OF
PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

THE EIGHTH ANNUAL SESSION 1863-64.

TRUSTEES.

HENRY C. CAREY, PRESIDENT,
W. L. ATLEE, M. D.,
DANIEL NEALL, D. D. S.,
ELLESLIE WALLACE, M. D.,
BENJAMIN MALONE, M. D.,
W. W. FOUCHE, D. D. S.,
GEORGE TRUMAN, M. D.,
S. DILLINGHAM, D. D. S.,
G. R. MOREHOUSE, M. D.,
THOMAS WOOD,
J. R. McCURDY,
CHARLES HAMILTON, SEC'Y.

FACULTY.

J. D. WHITE, D. D. S.,
Emeritus Professor.

T. L. BUCKINGHAM, D. D. S.,
Professor of Chemistry and Metallurgy.

C. N. PEIRCE, D. D. S.,
Professor of Dental Physiology and Operative Dentistry.

E. WILDMAN, D. D. S.,
Professor of Mechanical Dentistry.

G. T. BARKER, D. D. S.,
Professor of Principles of Dental Surgery and Therapeutics.

W. S. FORBES, D. D. S.,
Professor of Anatomy and Physiology.

JAMES TRUMAN, D. D. S.,
Demonstrator of Operative Dentistry.

E. N. BAILEY, D. D. S.,
Demonstrator of Mechanical Dentistry.

The regular course will commence on the first Monday of November, and continue until the first of March ensuing.

During October the Laboratory will be open, and a Clinical Lecture delivered every Saturday, by one of the Professors, at 3 o'clock, P. M.

The most ample facilities are furnished for a thorough course of practical instruction.

Tickets for the Course, Demonstrators' Ticket included, $100. Matriculation Fee, $5. Diploma Fee, $30.

For further information, address C. N. PEIRCE, DEAN,
501 *North Seventh Street, Philadelphia.*

PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

The Eighth Annual Session, 1863-1864.

The eighth annual session of the Pennsylvania College of Dental Surgery will commence on the first Monday of November, and continue until the first of March. Preliminary lectures will, however, be delivered each day during the latter half of the month of October, commencing on Monday, the 19th inst. The Dispensary and Laboratory of the College will also be open from that time, where ample opportunities will be afforded for the prosecution of the practical part of the profession under the daily supervision of the Demonstators, who are gentlemen of known integrity and thorough capability. During October, as well as the entire session, a clinical lecture will be delivered, and operations performed by one of the Professors every Saturday afternoon.

The course is so arranged that fifteen lectures are delivered each week, on the various branches taught in the school. A synopsis of the manner in which each department is treated will be found under the head of the different chairs.

These lectures occupy about the average time of three hours each day. In addition, four hours are daily spent by the student in actual practice. With this object in view, the operating rooms are furnished with twenty chairs, so arranged as to command the best light, and all the appliances necessary for comfort and use. To these chairs the students are assigned in classes, and certain hours are fixed for each member of the class to operate.

Each student is required to provide his own instruments, (except those for extracting,) and to operate with them. He is expected to keep them in perfect order, and for that purpose is provided with a table in which they can be locked up when not in use. As the operations performed at the College are entirely gratuitous, a superabundance of patients invariably present themselves.

In the mechanical department every process known in the profession, which has any value to the mechanical dentist, is fully taught; and receipts of valuable compounds are freely imparted. All the conveniences are at hand in the Laboratory for the preparation of metals, manufacture of teeth, (single and in blocks,) mounting, etc.; and the student is required to go through all the necessary manipulations connected with the insertion of artificial teeth—from taking the impression to the thorough construction of the denture, and proper adjustment of it in the mouth of the patient.

In addition to the facilities afforded by the College for a thorough course of instruction in the theory and practice of Dentistry, the celebrated hospitals and clinics of the city constantly enable the student to witness various important surgical operations which are highly interesting and instructive. The medical and surgical clinics of the Blockley Hospital, in particular, one of the largest eleemosynary establishments in the world, are open to Medical and Dental students, free of charge. The staff of this institution is composed of some of the most eminent physicians and surgeons of Philadelphia.

COURSE OF LECTURES.

CHEMISTRY AND METALLURGY.

The course of instruction from this chair will commence with the consideration of the imponderable substances.

The laws that govern the imponderable bodies will next claim attention, with some notice of symbols or chemical notations. Individual elements, and the compounds resulting from their combinations, will then be considered. Organic chemistry will receive its full share of attention.

The course will be illustrated by diagrams and such experiments as can be performed before the class.

DENTAL PHYSIOLOGY AND OPERATIVE DENTISTRY.

The lectures in this department will embrace the Physiological Anatomy of the teeth, general and microscopical, in addition to a minute and careful description of the various operations performed by the dental practitioner.

The microscope, models, and diagrams, will be employed in illustration.

At the Clinic the incumbent of this chair will also demonstrate before the class the various operations described in his course of lectures.

MECHANICAL DENTISTRY.

The instruction from this chair will embrace the entire range of manipulations legitimately connected with the laboratory, arranged in two divisions—Mechanical Dentistry proper, and that to which has been applied the appellation of the Plastic department.

I. *Mechanical dentistry proper* will include everything appertaining to the construction of dental substitutes, passing through the different stages of preparation, from taking the impression, to the completion and proper adjustment of the case in the mouth, conjointly with features, expression of countenance, enunciation, etc. It will likewise embrace the metallurgic treatment of the various metals employed, the preparation of plate and wire, the alloying of gold, together with the *alloys* used, as well as those designated as solders.

II. This division will comprise all that appropriately belongs to the manufacture of porcelain or mineral teeth—single teeth, block work, continuous gum-work, vulcanite, etc. The materials, their preparation, compounds and uses, will be specially regarded.

All new inventions, moifications, and improvements, in this branch of the art, will in place receive due attention and investigation.

PRINCIPLES OF DENTAL SURGERY AND THERAPEUTICS.

The lectures delivered from this chair will embrace General Pathology, Dental Pathology, the Pathological Relations of the Teeth to other parts of the System, together with a minute description of all special diseases that have any relation to Dental Surgery, or of interest to the Dentist.

They will also include a careful examination of therapeutic agents and their general application. Their indications in the medical and surgical treatment of diseases of the mouth, both idiopathic and symptomatic, will be fully illustrated, and also the general hygienic rules and principles which come within the province of the practitioner.

ANATOMY AND PHYSIOLOGY.

The instruction in this department will embrace a plain and comprehensive view of the structure and functions of the Human Economy. The valuable anatomical preparations of the incumbent of this chair, (consisting of Papier Mache manikins, models in wood, drawings, wet and dry preparations,) will enable him to fully illustrate his course. With the same object, vivisections on the lower animals will also be employed.

The special relations of this branch to the wants of the dentist will be kept steadily in view, and such descriptions of the natural history, microscopical structure, connections, &c., of the teeth, as their importance demands, will be given.

The great facilities for the study of practical anatomy, to be found in the city of Philadelphia, obviate the necessity of providing a dissecting-

room in the College. For the usual fee of $10, the student can have access to one of several well-ordered and well-supplied dissecting-rooms.

CONDITIONS OF GRADUATION.

The candidate must be twenty-one years of age, and of good moral character. He must have studied under a private preceptor at least two years, including his course of instruction at the College. Attendance on two full courses of lectures in this institution will be required, but satisfactory evidence of having attended one full course of lectures in any respectable dental or medical school, will be considered equivalent to the first course of lectures in this College: five years' practice, inclusive of the term of pupilage, will also be considered equivalent to the first course of lectures. The candidate for graduation must prepare and defend a thesis upon some subject connected with the theory or practice of dentistry. He must treat thoroughly some patient requiring all the usual dental operations, and bring such patient before the Professor of Operative Dentistry. He must take up at least one artificial case, and after it is completed, bring his patient before the Professor of Mechanical Dentistry. He must prepare a specimen case to be deposited in the College collection. The operations must be performed, and the work in the artificial cases done, at the College building. He must also undergo an examination by the Faculty, when, if found qualified, he shall receive the degree of Doctor of Dental Surgery.

FEES.

Fees for the course, (Demonstrators' tickets included,)	$100
Matriculation, (paid but once,)	5
Diploma fee,	30

TEXT BOOKS.

Wilson's, or Leidy's Sharpy and Quain's Anatomy—Carpenter's Physiology, or Dunglison's Human Physiology—United States Dispensatory, (Neil and Smith's Compendium)—Mitchell's Materia Medica—Fownes' Elements of Chemistry—C. J. B. Williams' Principles of Medicine—Wood's Practice—Erichsen's System of Surgery—Tomes' Dental Physiology and Surgery—Harris' Principles and Practice—Taft's Operative Dentistry—Richardson's Mechanical Dentistry, or other standard works on the subject.

DEMONSTRATORS' REPORT.

SESSION 1862–63.

OPERATIVE DEPARTMENT.

772 patients, for whom the following operations were performed:

FILLINGS.

Front Incisors,	206
Lat. Incisors,	110
Cuspidati,	57
Bicuspids,	207
Molars,	508
Treatment and Filling Pulp Cavities,	115
Temporary Fillings,	12
Total,	1215

Of the above there were of

Gold,	634
Tin,	566
Hill's Stopping,	12
Amalgam,	3

Of the operations there were

Superficial Caries Removed,	11
Removal of Salivary Calculi,	46
Pivot Teeth Inserted,	5
Treatment of Inflammation of the Gums,	3
" " " Pituitary Membrane of the Antrum,	1
" Alveolar Abscess,	23
" for Irregularities,	10
" " Partial Necrosis,	5
Extraction of Supernumerary Teeth,	6
" Teeth and Roots,	2061
Total,	3386

JAMES TRUMAN, DEMONSTRATOR.

MECHANICAL DEPARTMENT.

95 patients, for whom the following operations were performed:

Whole Sets of Teeth,	10
Full Upper Sets,	48
" Lower "	3
" Upper " Blocks,	1
" " Continuous Gum Sets,	4
Partial Upper Sets,	43
" Lower "	7
Obturators,	2
Whole number of Teeth Mounted,	1242

EDWARD N. BAILEY, DEMONSTRATOR.

GRADUATES, 1862-63.

John B. Young,	N. P.,	Sensitive Dentine.
Charles Degner,	Germany,	Diseases of the Antrum.
Jose Rafael Brunet,	Cuba,	Circulation.
James H. Hatch,	California,	Caries and its Treatment.
Majin Peralto,	Puerto Rico,	Mechanical Dentistry.
Thomas A. Anderton,	Pa.,	The Teeth.
John W. Vandevort,	Pa.,	Our Profession.
James Brown,	N. Y.,	The Extraction of Teeth.
Charles L. Aspinwall,	Mass.,	The Development, Articulation, &c , of Second Dentition.
Silas Griffith,	Pa.,	Relative Anatomy of the Teeth.
L. Buffett,	Ohio,	Periostitis.
Jules Marcelin,	N. Y.,	Alveolar Odonto Periostitis.
Wm. Mitchell,	Ohio,	Hemorrhage.
C. M. Wilkie,	N. Y.,	The Blood, its Various Properties and Relations.
J. I. Singley,	Del.,	The Mode of Obtaining Impressions of the Superior and Inferior Maxilla.
A. S. Miller,	Pa.,	Dies.
Robt. H. Antis,	N. Y.,	The Physiolgical Anatomy of the Teeth.
Elbert Todd,	N. Y.,	First Dentition.
George C. Loar,	Illinois,	Dental Caries and its Treatment.
C. H. Eutujian,	Turkey,	Caries of the Teeth.

THE

DENTAL TIMES.

VOL. I. PHILADELPHIA, JANUARY, 1864. No. 3.

EXTRACTING TEETH.

BY C. N. PEIRCE, D. D. S.

There is probably no operation performed by the dentist that is attended with more fear on the part of the patient, and greater liability to accident, either trifling or serious, than that of extracting teeth. Nor is there any one branch of our profession, where in the last few years the improvements have been greater, and the chances of failure so much reduced, as in this speciality. A few suggestions may, however, enable some one to operate with more confidence, and spare some unfortunate a few moments' suffering.

In performing an operation, whether it be mechanical or surgical, there is no one thing that contributes more to success than a thorough appreciation of the end in view, and the means essential to accomplish it. For instance, the removal of a particular tooth has been decided upon; now, the conditions that should be fulfilled are, "the whole of the offending organ should be removed, it should be done with as little injury as possible to the surrounding tissue, and the patient spared all unnecessary pain." To do this there are several things essential: the operator should be familiar with not only the number of fangs, but the relative positions they assume in the alveolus, as well as the density of the structure surrounding them. Though definite and positive knowledge we have not, yet much can be learned by experience and observation; and to be familiar with and constantly bear in mind the probable number, shape and bifurcation of the fangs, will do much to prevent accident, and render the operation less painful.

In extracting the incisors with their straight and cone-shaped fangs, the rotary motion, if persistent, will invariably be sufficient to break up their membranous connection with the alveolus; but not so readily are the cuspidati removed; for often toward the apex of the fang we find them curved posteriorly, which renders the rotary motion inefficient, and makes it necessary to apply the force so as to dislodge the curve from its well-adapted alveolus, which is readily done by pressing the crown backward

or towards the posterior part of the mouth. The superior bicuspids, with their fangs compressed, and those of the anterior ones invariably bifurcating toward their apex, require the in and out motion in addition to the slight rotary.

The fangs of the inferior bicuspids in shape nearer resemble those of the incisors, and in extracting, if the forceps are pushed well down upon or below the neck, they are removed with more ease than the superior. The superior molars with their three fangs, two buccal and one palatine, admit of but little or no rotary motion, but require a persistent pressure inward and outward. The inferior molars, having generally two fangs, the anterior and posterior, like the superior, frequently require the force alternately, toward the buccal and lingual surfaces, though generally a severe and persistent external force is best adapted for their removal. Their fangs, like those of their antagonist, often converge and clasp firmly a portion of the alveolus, which, if the fangs do not break, is invariably broken off and brought out with the tooth. The third molars, or dentes sapientiæ, are so unreliable in the number and shape of their fangs, that it is unsafe to predict their complete or speedy removal; but the force applied toward the external or buccal surface is in the majority of cases all that is necessary, though in many the curvature of the fang posteriorly is so great, that the crown requires to be thrown in the same direction, in order to break its connection with the alveolus. There is one point that might with advantage be borne in mind, it is that where the fangs are curved, whether it be that of a canine, bicuspid or molar tooth, the direction is generally posteriorly, and by forcing the crown in the same direction, the tooth is released.

There are other conditions of the teeth and surrounding tissue worthy of note, which may assist in forming a correct judgment with reference to the force essential to effect their removal. A molar tooth, with high crown and comparatively smooth and large masticating surface, with the neck of much less diameter, invariably indicates long and bifurcating fangs. So, also, does the short crown with prominent cones or cusps, and parallel sides denote the opposite; likewise the even gum, free from the prominences designating the position of the fangs, indicates thick, dense alveolus. These, and other conditions, which careful observation may teach, all play an important part in retarding or facilitating the operation.

The one thing to be impressed upon the novice in the art, is to avail himself of all the advantages at his command, and then let his mind comprehend and his eye follow every movement of the instrument, which should be made with decision and care, avoiding the appearance of nervousness or want of confidence in his own ability.

In selecting the instrument, such an one as would most thoroughly clasp

the tooth at its neck and apply the force on a line with its axis, is desirable. The great advantage in having the beaks of the forceps sufficiently wide to clasp and accurately fit a large portion of the tooth, is, that the pressure being diffused, is less liable to fracture or crush it. Much is gained from dividing the operation into different stages—not that any space of time should elapse between, but that the object of each may be fulfilled before another is attempted. For instance, the first in the operation of extracting is to thoroughly seize the tooth, pressing the forceps well towards the apex of the fang, until they come in contact with, or pass under or over the edge of the alveolus. Next, is to so apply the force as to break the connection it holds with the alveolus, this varying with the number and shape of the fangs, but must be persevered in until the object is accomplished, after which the tooth is removed by lifting from the socket. To attempt the latter without completing the former, would be worse than useless.

In extracting a number of approximal teeth, there is great advantage in availing one's self of the alveolar socket through which to seize the tooth adjoining. If the cuspidati or the first biscuspid should have but recently lost the teeth on each side, there is no better means of removing them than by letting the beaks of the forceps occupy the adjacent alveolar socket, then with a moderate force pressing the crown or root towards the posterior part of the mouth, the connection is easily broken and the tooth removed.

In the extraction of fangs where the crowns have been lost for some time, failure is often the result of neglecting to push the beaks of the forceps near to the apex. In the roots of the anterior teeth we have no hesitation in the free use of the lance, by making an incision the full length of the fang on the labial surface, and then with narrow beak forceps, pass them up external to the alveolus, crushing it and removing it with the fang. This we deem the only reliable means of getting out many of those roots, and much better than by the use of the screw, or partly seizing and crushing, until the patient is worn out by the operation being so prolonged. The questions invariably asked by the patient before submitting to what seems to be a difficult operation, are, "Will it break? Will you have to try more than once? or, How long will it take?" Almost any one can be prevailed upon to submit to a single effort, but when it is to be repeated two, three or four times, the nervous system is taxed and the patient loses self-control.

In the roots of molar teeth, where from any cause they offer considerable resistance, it is well with a pair of forceps similar to Physic's, to break their connection with each other—in doing so, they are thrown apart and slightly loosened, then with a pair of narrow beak forceps take them out separately; if in the upper jaw, remove one of the buccal fangs first, then with the socket as a guide for one beak of the forceps, remove the others;

if lower molars, the posterior fang will be most easily removed first, particularly if there is a tooth standing anterior to the roots. For the anterior fang, lying directly posterior to a large tooth, take a strong lance-shaped elevator, and standing at the side of your patient, force it well down between the sound tooth and the one to be extracted, then with a firm twist of the handle, the tooth serving as a fulcrum for the instrument, the fang is thrown backward and out. In removing the roots of the wisdom teeth where the second molars are in place, the operation is often much facilitated by the slightly curved elevator passed down between them and the second molar, then with a proper effort, force the roots back and up; if it is the superior wisdom tooth, and it offers much resistance, there is some danger of breaking off a portion of the tuberosity, to avoid which great care should be exercised. Forceps for the extraction of roots need to have the beaks narrow and sharp, with a variety in shape, sufficient to reach the fang in any position.

REMUNERATION FOR DENTAL SERVICES.

BY B. WOOD, M. D.

In response to your invitation to contribute a communication to the DENTAL TIMES, I have a mind to say a few words upon the subject of remuneration for dental services. Without a re-examination of the various articles that have appeared, I write with some hazard of merely repeating what already may have been much better written; but my impression is, that the points I wish to make have not been very prominently set forth.

We find the profession divided into two classes on the Fee Question; the one contending for such compensation as shall warrant the bestowment of the highest skill and benefit; the other striving to accommodate the price to the lowest requirements, with little reference to service.

Were the public all wealthy, generous, and intelligent; or were they all penurious and ignorant, (whether wealthy or not,) the conflict would cease. Society can command almost any benefit, within the capacity of human skill, they are willing to pay for, or by stinted reward debar themselves from every excellence produced by human skill. Adequate encouragement would enlist the best talent in our profession everywhere.

There is much to discourage the ambitious. But let it suffice, that there is a portion of the community who do concede such remuneration as will enable the operator to undertake and execute what adorns his calling, while it blesses the recipient. When the great public shall have better learned the nature of dental services and been brought to a better appreciation of them, we may believe that this state of things will be general,

and that wealth and generosity will provide eleemosynary means by which the poor also may share the highest benefits of the art.

On the other hand, there is no descending low enough in our rates to satisfy the penurious, (while the indigent are always beyond reach but of charities.) No matter how low the figures, there will be enough to underbid them, and, not to fall to the lowest bid offered, or a little lower, will leave the requirements unsatisfied.

At this time, when "sets of teeth" are advertised at $5 and $10, there is probably more "shopping and jewing" to procure them still less than ever before. The advantages assumed of bringing artificial teeth within reach of the poor, are questionable. Formerly the poorer classes kept their natural teeth as long as possible, and by prudent retrenchment of expenditures were able, when necessary, to get a serviceable set which did not mar their expression. Now rich and poor, flaunting in more finery, submit to the sacrifice of valuable teeth for the poor privilege of exhibiting the characteristic signs of "cheap dentistry."

Those who operate at the lower rates have a struggle to keep up *their* prices. Descend to gratuitous operations and patients will account it "bad enough to bear the pain," and feel a debt of gratitude due them for their favor and "influence."

Is it all benevolence on the one hand, and poverty on the other, that constrain to low fees? Dentists who were benevolently extracting teeth for twenty-five cents, or less, having recently gotten hold of laughing gas, now charge a dollar; and patients who before regarded the former "pretty steep," now find themselves able to pay the latter "and take the gas." In a little while competition will bring the same operators to "extracting teeth, with the gas, without pain, all for twenty-five cents," when the same class of patients will probably come to the conclusion that they ought to be compensated for taking the drug.

Preliminary to affixing an equitable compensation, we need a recognized standard of valuation, expressive of the nature of our duties. Much depends upon the stand point, or governing principle, assumed. It is a misconception that the principle is immaterial, so that there be unity of purpose and action. A wrong track leads wide of the goal. A house built on false foundation falls. The amalgam war miscarried because begun and conducted on the wrong principle. So the war upon patients, in making false issue against a system good in itself instead of abuses growing of out, eventuates in failure.

By what criterion should we estimate dental services? Doubtless, according to the knowledge, skill and time involved in their performance, rather than the number of operations done. Yet our fee bills assume the latter. The very captions start a wrong impression. They strike one as

bills of sale, so much a commodity, instead of remuneration for the exercise of skill, and benefits conferred thereby. "Prices for dental opertions," and "fees for dental services," may mean the same thing, but they awaken different conceptions. Nor do they mean exactly the same. One shall get large pay for "operations," who, if his claims were based upon "services," would get nothing.

The "price lists" proceed to specify—for instance, so much each for gold plugs, small, medium, large, &c. Now it is clear enough to all, that the price should vary according to the amount of time and gold employed, but not so evident why different operators should vary widely in price in the same case. One may be competent, the other not, their charges differing accordingly. But the patient is a stranger to either; has, perhaps, been referred to both as qualified. If he chooses the inferior operator, it is because he gets the greater number of operations for his money; if the other, it is on the belief that he shall get the most service for it; this, common sense recognizes as the test of value. But how is he to judge? How determine the difference in the fillings, if he sees them, when it might require the inspection of a good dentist to discriminate? If the charges were based upon the *time* occupied, it would afford some surety that a like amount of *work* would be done in a given number of hours, whether expended upon a few plugs or many. In that case incompetent operators would have little advantage, since they generally charge well in proportion to the actual time and labor bestowed. It is not difficult to judge as to the manner of manipulating, and the "pains taken"—the skill in actual exercise. Why not then put our rates to be suggestive at once of skill, time, service?

It is a custom with some to insist upon expense of material, basing their estimate upon extraordinary cases. This, when the cavities in hand are large, looks plausible. The patient sees with surprise pellet after pellet introduced, and feels them well packed. He is satisfied of a "value received." But it is the idea of value in commodity, rather then service—the idea of traffic, bullion exchanged for currency. Of the means for reconciling our patrons to an equitable remuneration, I conceive this to be one of the most unfortunate. Yet I have known competent operators to ply it, in office and out. We ought to talk little about the cost of material? it would be much better if we could truthfully say it cost *nothing*, for this would make way for a more correct conception. Least of all should there be any exaggeration.

That the gold used in large cavities is an item, all understand. In such cases good operators will use an amount of foil costing more than the sum charged by pretenders for a like number of "stauffings" with the same material. Yet, it must be conceded, this expense is but a trifle in ordi-

nary cases, (as it should be in all,) compared with a fair compensation for services. Why attempt to magnify to patients? They, too, learn to estimate material, the cost of a book of foil, the number of sheets in it, how much goes into a tooth, &c., and while dentists take larger plugs as the ground of calculation, they take small ones, their estimate passing current on the assumption of disinterestedness. If the public perceive a disposition to magnify the actuality, is it strange they should come to underrate it? Misled by the idea of trade and barter, what wonder if they cavil at the "large profit" on the material? Better give them to understand, emphatically, that the material is merely a means to an end, that we do not charge a premium upon it, that our claims to remuneration are based upon services rendered, regulating the fee according to the time and skill devoted to the same.

One serious impediment in the way of a grade of fees which shall not only warrant the higher achievements of our art, but maintain the best services in ordinary cases, is a depreciatory spirit manifest (to a certain extent) among the better class of dentists themselves, (as well as others.)

A larger fee, in any particular, or for any service, is ascribed to anything but superior skill, or a juster appreciation. Pride will not tolerate the idea of greater value. Another's higher price is, so far, extortionate; one's own lower price is due to greater facilities or proficiency—anything that will commend one's self, or, at least, not another. Now if the better class employ this logic in respect to each other, why may it not be valid against themselves in the mouths of inferior operators. Besides, some may yet reach the higher stand-point—to be hit by their own shafts.

We should not disparage or impugn others for being so fortunate as to excel us in any particular operation, or to win a higher appreciation for the same service than we are able to win: much less pronounce their success in extraordinary cases a humbug, because we may not succeed, will not undertake, or dare not affix a compensation which will remunerate us for their successful performance.

ALBANY, NEW YORK.

NITROUS OXIDE.

BY T. L. BUCKINGHAM, D. D. S.

This gas is known by the name of *Nitrous Oxide, Protoxide of Nitrogen, or Laughing Gas*, (NO.)—As the use of this gas to produce anæsthesia has recently been recommended by a number of the profession, it may be interesting to the readers of the DENTAL TIMES, to know how it may be obtained.

It may be procured by several different processes. When zinc is dissolved in diluted nitric acid, both the protoxide (NO) and the deutoxide of

nitrogen (NO_2) is formed; if this mixed gas is allowed to stand over damp zinc or iron filings, the deutoxide is decomposed, one portion of its oxygen going to oxidize the zinc or iron which reduces it to the proto or nitrous oxide. By this process the gas is never pure, unless extraordinary pains are taken to obtain pure zinc and acid. All the common zinc of commerce contains impurities, and some a very large amount; the gas is never made in this way for inhaling. The process by which nitrous oxide is usually obtained, is by heating the nitrate of ammonia in a retort. The nitrate of ammonia is formed by the union of ammonia with nitric acid. Pure nitric acid is saturated with carbonate of ammonia, then evaporated and crystallized. The composition of this salt is NH_3HO,NO_5.

It was formerly called *nitrum flammans*, on account of its rapid decomposition when heated to about 600°; it is deliquescent, and should therefore be kept in well stopped bottles. This salt is soluble in less than its own weight of water, at 60°; the taste is acrid and bitter. The carbonate of ammonia frequently contains hydrochlorate of ammonia, which becomes mixed with the nitrate, and when the nitrate is decomposed, chlorine is mixed with the nitrous oxide. Chlorine when present may be detected by passing the gas through a solution of the nitrate of silver, or a better way is to dissolve some of the nitrate of ammonia in water, and then add some nitrate of silver in solution; if there is the least chlorine present, a white curdy precipitate will be formed. Nitrate of ammonia when exposed to the air, or kept in badly stopped bottles, shows the presence of acid when tested with litmus.

The apparatus necessary to make the gas is a glass retort, or bottle; a wash bottle, and a bag to receive it. The size of the retort will depend on the quantity of the gas required; it should never be filled more than one-third full of the salt, and should have a stopper to allow the gas to escape if generated too rapidly. The wash bottle may be of the kind known as Wolfe's bottle, with two or three mouths, or any ordinary wide mouthed bottle will answer the purpose, and should be from a quart to a gallon in size. An India rubber bag, holding not less than six or seven gallons, or when the gas is prepared for several administrations, a larger bag to receive the gas, and a smaller one of about five gallons to inhale it from.

To procure the gas the retort is placed where a lamp can be lighted under it, or a better way is to place it in an iron pan, partly filled with sand, arranged so that heat can be applied, as the flame of a lamp is liable to break the retort when directly applied. The retort is connected to the wash bottle by a tube passing through the cork nearly to the bottom of the bottle, and to another tube passing just through another cork of the bottle the bag is attached. The wash-bottle should be filled three-fourths

full of a solution of potassa or the sulphate of iron. When heat is applied to the retort the salt first melts, becomes fluid and boils, and at the temperature of about 400° F., the gas begins to come off—a gentle ebullition should be kept up. If the retort is heated too hot the gas comes over so rapidly as to endanger the apparatus, hence the importance of having a stopper in the retort to allow it to escape. The gas is forced down to the bottom of the wash bottle, and in passing up through the solution is washed, and the impurities it may contain are left in the solution. The gas bag must have a stop-cock in the tube attached, to prevent the gas from escaping when it is filled.

Instead of the India rubber bag, a metallic gas-holder is sometimes used; these are constructed in several forms; one of the most simple and convenient is to take a wooden vessel, such as a barrel that will hold water, and have a metallic one made that will go inside of it. The metallic vessel may be made of sheet iron, tin or copper; the latter is the best although it will cost the most at first. The metallic vessel is to be inverted inside the wooden one, and should have a tube and stop-cock attached to the top. The wooden vessel must have a tube passing in near the bottom extending upwards about two inches in the centre of the barrel and a stop-cock on the outside. There should also extend upwards from the barrel three or four pieces of wood to prevent the gas-holder from falling over when it is being filled. To collect gas in a receiver of this kind the barrel is filled with water and the stop-cock on the top of the gas-holder is opened so that it may also be filled with water. The stop-cock is now closed, and the one on the outside of the barrel opened to allow the water in the barrel to run off to within two or three inches of the bottom. The reason for doing this will be shown presently. The retort is now arranged in a position as high as the top of the barrel at least, and connected with the tube on the outside. When the stop-cock is opened the water will fill the tube to the height it is in the barrel, and if the retort was in a lower position than the barrel it would also become filled. If the barrel had been left full of water it would rise in the tube to the height of the barrel, and before the gas could pass into the gas-holder it would have to force the water out of the tube, which would require a considerable pressure, enough sometimes to break the retort. The gas passes in and comes up through the water into the receiver. As it becomes filled with gas it rises in the barrel; when full the gas passes out beneath and comes up between the barrel and receiver. The barrel should now be filled again with water, when the gas is ready for use.

Nitrous oxide in passing through water is deprived of any chlorine which might have been in it, the chlorine being soluble in water. The deutoxide of nitrogen is said to be formed when the salt is heated too

hot. This gas is not soluable in water to any amount, but when exposed to the air it takes two equivalents of oxygen from it and becomes nitrous acid, which is very soluble in water; hence the importance of leaving a small portion of air in the receiver. The deutoxide may be detected by allowing some of the gas to escape in the air, when it will show the red fumes of nitrous acid; they are seen when silver or copper is dissolved in nitric acid; they are of a reddish color and very poisonous. The properties of nitrous oxide and the administration of it will be a subject for a future paper.

CREASOTE IN CAVITIES PREPARATORY TO FILLING.

BY WILLIAM H. ATKINSON, M. D.

Knowledge is said to be power. If so, those who possess it in any degree should remember that high authority suggests that "the strong should help the weak." And it is well known that we have all been weak enough in the matter of saving the teeth by filling them, even with our best and most improved materials and methods. Fulfil, barely, *three* conditions, and you may be sure that a tooth will remain without further loss by disintegration (caries or decay) in the place or cavity in which the conditions are obtained.

What, then, are the conditions?

1st. Secure a sound external margin to your cavity.

2d. So shape the cavity that it can *retain* the filling when solidly impacted therein; and

3d. Saturate the cut dentine with pure creasote, and put in your filling air and moisture-tight.

If any wish to know in what estimation I hold the above directions, let me state that they are deemed by me, when fully comprehended and properly fulfilled, as paramount to all other instructions, I ever heard or am able to give to him who is in earnest to do his work as a Christian or manly operator should perform all his labors. And I would take occasion to say that this is no hasty conclusion, but, the deliberate and well matured judgment of one who has struggled against ignorance and the attendant sequels thereof, for more than a quarter of a century with undying determination to conquer the difficulties in the way of saving the *natural* teeth, or die in the attempt, with his face and purpose set as a flint in that direction; feeling assured, that the conception, that it is *possible*, is the sure prophecy that we are destined soon to realize the full end sought by the noble ambition and aim, to preserve unbroken to every patient a full and regularly set natural denture to the end of his natural life on the planet.

New York, December 2d, 1863.

CREASOTE.

BY GEO. T. BARKER, D. D. S.

The therapeutical properties possessed by creasote, eminently fit it for extended use in dental practice. We have, therefore, concluded that no more appropriate subject could be considered, and propose to discuss, in a brief manner, its chemical and therapeutical properties.

Creasote is *officinal* under the name of *Creasotum* in the United States and British Pharmacopœias. The name is derived from two Greek words, signifying flesh—I preserve; and it possesses the property of arresting decomposition in animal tissue in a most marked degree, hence its name. This substance was first discovered by Reichenbach, of Blankso, in 1832, and it has been stated by him, as an example of its antiseptic properties, that fresh meat, dipped for a quarter of an hour in a solution of creasote, would be preserved from putrefaction, and contends that smoked meats owe their power of resisting change to the presence of that substance. Its specific gravity at 69° F. is 1.037, it boils at 397° F., and retains its fluidity at —17° F. Creasote is obtained by two methods, either from coal tar, or crude pyroligneous acid. The United States Dispensatory thus describes the process: "When tar is used, it is distilled until it assumes the consistency of pitch. The distilled liquid divides itself into three layers, an aqueous between two oily layers. The inferior oily layer which alone contains the creasote, is separated, and saturated with carbonate of potassa, to remove acetic acid. The liquid is allowed to rest, and the new oil which separates, is decanted from it. This oil is distilled, and yields products lighter than water, and a liquid heavier. The latter alone is preserved, and having been agitated repeatedly with weak phosphoric acid to neutralize ammonia, is allowed to remain at rest for some time. It is next washed, as long as acidity is removed, and then distilled with a fresh portion of weak phosphoric acid, care being taken to cohabit from time to time. The oily liquid thus rectified is colorless, and contains much creasote, but also a portion of eupione. To separate the latter, the liquid is mixed with a solution of caustic potassa of the density of 1.12, which dissolves the creasote, but not the eupione. The eupione which swims above from its levity, being separated, the alkaline solution of the creasote is exposed to the air until it becomes brown, in consequence of the decomposition of a foreign matter, and is then saturated with sulphuric acid. This sets free the creasote, which is decanted, and again distilled. The treatment by solution of potassa, sulphuric acid, &c., is to be repeated until the creasote no longer becomes brown by exposure to the air, but only slightly reddish. It is then dissolved in a stronger solution of potassa, and distilled again, and finally redistilled for the last time, rejecting the first portion which comes over on account of its con-

taining much water, collecting the next portion, and avoiding to push the distillation too far. The product collected in this distillation is pure creasote.

When creasote is extracted from pyroligneous acid, the first step is to dissolve sulphate of soda in it to saturation. The oil which separates and swims above is decanted, and having been allowed to remain at rest for a few days, is saturated by carbonate of potassa, with the assistance of heat, and distilled with water. The oleaginous liquid obtained is of a pale yellow color, and is to be treated with phosphoric acid, &c., &c., as above detailed with respect to the treatment of the corresponding oil obtained from tar.

Creasote, when pure, is colorless; as met with in the shops it is of a brownish tinge, probably due to the presence of certain impurities or adulterations. The commercial article has a penetrating, disagreeable odor, caustic burning taste and is readily volatilized by heat, it is also a non-conductor of electricity, and a powerful refractor of light. Chemically considered, it is composed of 76.2 of carbon, 7.8 hydrogen, 16 oxygen, or to express it in equivalents, $C_{13}H_8O_2$. Creasote is frequently adulterated with rectified oil of tar, and with the fixed and volatile oils. It is said the adulterations can be detected by treating it with strong acetic acid, which dissolves the creasote, and leaves the impurities floating above the creasote solution. Dr. W. H. Atkinson has recommended as a test pure olive oil; if it dissolves without leaving any precipitate, it may be considered pure. Specific gravity is not a good test, as liquids are used for adulterating purposes that may give it the requisite density. Creasote is exceedingly destructive to vegetable life. Miguet states that plants die when they are watered with a solution of creasote. A young and vigorous rose bush in full bloom, when thus treated, withered in the course of eight days. A few drops of the same solution applied to a red rose, deprived it both of color and life. On animals, creasote exerts a peculiar influence. It is stated by Dr. Stille, that "small fish die speedily in two ounces of water containing twelve drops of creasote. Flies, wasps, spiders and other insects, show signs of great uneasiness at the contact of creasote water, and at length die in spasms." Miguet tried several experiments demonstrating the effect upon dogs. He gave to a dog two months old, eight drops of diluted creasote, the effects were soon visible in general emaciation, feebleness of gait, and the occurrence of frequent nausea. To another he gave two drachms, the principal signs were great distress, labored respiration, obstruction of the air passages with mucus, constant nausea and violent retching. At the expiration of two hours death ensued. The principal lesion discovered was universal vascular injection of the gastro-intestinal mucous membrane. The lungs were engorged with

blood, and there was also a more than ordinarily dense coagulum of blood in the heart and large vessels. When injected into the blood vessels in quantities of about a drachm, the heart instantly ceased to beat.

Creasote possesses the following properties, viz: stimulant, narcotic irritant, styptic, antiseptic caustic, and escharotic. By some writers on therapeutics it is ranked among the astringents. (Headland on the action of medicine.) Others, also, rank it among the protectives and rubefacients. It possesses two remarkable properties: 1st. The property of arresting and preventing animal decomposition. 2d. The power of coagulating albumen, with which it unites, forming an insoluble compound. This last named phenomena is exhibited when a drop of creasote is applied to the mucous membrane, or the denuded cutis, first exciting a sensation of burning pain, then covering the parts with a whitish film, formed of coagulated albumen. This appearance is frequently seen by the dentist who introduces creasote into a tooth. If, by neglect of proper caution the lips or tongue are touched with the agent, a sense of pain, followed by the appearance of the white film of coagulated albumen will be noticed. The taste is so penetrating and peculiar, that it is stated that it can readily be detected in a solution of one part of creasote in *ten thousand of water.*

When creasote is swallowed in large quantities, it occasions severe and alarming symptoms. One fatal case is recorded, death resulting in thirty-six hours, from swallowing about two drachms. Another case is spoken of by Strumpf, in his Handbuch, of a woman, sixty years of age, who took a "considerable quantity" by mistake. She was almost immediately attacked with excruciating gastric pains, and within three or four hours had upwards of forty painful and bloody stools. Oil, milk and opium were administered as antidotes, under the use of which she recovered. In large doses, as above stated, it acts as a poison, and there is at present no antidote known to its poisonous effects. The treatment generally resorted to, is to administer ammonia and other stimulants. The fact of its being so violent a poison, should caution dentists who use the agent so universally, to extend considerable care that it is not placed in unsuitable positions, where portions of it may be taken either designedly, or by accident. The last named is not so liable to occur with this poison as with many others, in consequence of its burning taste and disagreeable odor.

When the use of creasote has been continued for a length of time, it is apt to occasion dullness, giddiness, and accelerated circulation, with more or less interruption of respiration, constant nausea and muscular lassitude. The urine, which is usually increased in quantity, except in diabetis, is colored, as if by India ink, and gives off the peculiar odor of the medicine. That creasote is readily absorbed into the circulation, is proven by the

case recorded of a woman who was attacked with faintness, vomiting, palpitation of the heart, and other symptoms of poisoning, in consequence of the continued use of creasote water, to a large ulcer of the leg. In our next we propose to consider creasote as a therapeutical agent, in the hands of the dentist and the general practitioner of medicine.

TO BE CONTINUED.

A CASE OF DEATH FROM THE EXTRACTION OF A TOOTH.

BY GEO. B. SNOW, D. D. S.

Henry Campbell, aged 26, a grain shoveller employed in an elevator, was admitted to the Buffalo hospital of the Sisters of Charity, on Wednesday, A. M., November 4th, with violent inflammation of the lower part of the face and fauces. It appears he had a tooth, a lower bicuspid, extracted on the previous Sunday, by a so-called "doctor" practicing in the lower part of the city. Nobody went with him when he had the operation performed. From what he afterwards said about it, it is believed that the key instrument was used, and that some little trouble was experienced in getting the tooth out. He spoke of the gum lancet and other instruments as being rusty, and looking as though no pains were taken to remove the blood from them. He was in his ordinary health at the time, having been at his work the day before.

On Monday, his face about the lower jaw was swollen and painful, and continued to grow worse. On Wednesday, when he came to the hospital, the swelling was very great, extending over both sides of the lower jaw, under the tongue and into the fauces; his speech was scarcely intelligible, and the power of deglutition was very much impaired. A discharge, resembling disorganized blood, exuded from the gums of the lower jaw. Owing to the swollen and painful condition of the parts, no very close examination could be made. Friday, A. M., the condition was much the same; articulation was still more difficult, and deglutition impossible; the bloody discharge still continued oozing from the gums, but had more of a purulent character; his pulse was 100. Saturday, A. M., his pulse was extremely rapid, and he was evidently failing; he died about 4 o'clock, P. M. The immediate cause of his death was probably œdema of the glottis, impeding the power of respiration to such an extent that the blood became gradually carbonized and unfit to support life.

So far as was ascertained, no unusual amount of injury was done in the extraction of the tooth. An examination was made after death, but nothing new was elicited. The *cause* of the mischief, I am afraid, is past finding out. Can any one throw any light upon it?

BUFFALO, NEW YORK.

Judging from the symptoms in the above case, it is probable the patient was attacked with erysipelas, which resulted in his death. W. S. F.

THE TREATMENT OF EXPOSED NERVES.

Abstract of a paper read before the "Brooklyn Dental Association."

BY THOMAS BURGH.

Much has been said upon this subject, and it may be considered hackneyed; but it is, nevertheless, an important and inexhaustible theme; and it is my desire to awaken discussion upon it. I am impelled to consider this subject as much by penitence as from any other consideration. Penitence! that in time past so many teeth have been wrenched from their sockets that might now fill their appropriate places. Penitence? No, rather regret. I did no moral wrong, but only carried out the practice as taught to me. But observation has enlarged my views, and I now so seldom extract a tooth, that when called upon to perform the operation a feeling of nervousness is always present; unless it is an old ulcerated root, and then a double pleasure is experienced in doing it; first, because nature is being relieved, and is assisted in the expulsion of a disgusting excretion: second, because the evidence of the patient's shame and neglect is destroyed.

The dental profession has, in all its branches, made many advances during the last few years; but there is nothing, in my opinion, which has shed so much lustre upon it as its progress in the treatment of exposed nerves, and the consequent saving of so many teeth that formerly were so unthinkingly sacrificed. If there is one thing, among ordinary operations, which makes me proud of my profession, it is this progress. To extract from the centre of the tooth its exquisite nerve, its life-giving tissue, when it has become a source of torment rather than a benefit, and save the tooth, is to me always a source of satisfaction. This may *indeed* be termed "Surgical Dentistry." To extract that tooth, and supply its place with an artificial one, is one of the lowest achievements of the profession. To destroy the nerve, and, without removing it, fill the tooth, is but little better.

The operation of capping the nerve has, in my judgment, disappointed the expectations formed of it. The profession must take many a step in advance before it can be generally performed. To do it satisfactorily and habitually is not only an evidence of the highest skill, but also of far more attainment in general medicine than the profession has yet acquired. For my part I have ventured upon it in but few instances, and some of these have caused me more trouble than all my fang fillings together. A case in point occurred a few years ago, which, as it gave me much trouble and some months of honest effort to save the nerve alive, I will relate. A gentleman came to me to be relieved of the toothache; it had not ached much, but still was an annoyance. The tooth was an inferior molar, and the cavity was in the anterior approximal surface.

Upon excavating it I could not determine whether the nerve was exposed, not being able to see it, and pressure upon it of cotton caused no pain. But still it gave many symptoms of being exposed, and considering it a favorable case for capping, resolved, if possible, to save the nerve alive. The cavity was filled with gutta percha, intending to put in a more substantial filling in course of time. In a few days he returned saying that his tooth was a constant source of annoyance to him, with a steady, slight, dull ache. In course of time this increased, and I became satisfied that if the nerve was to be saved, it could not be done with a filling of gutta percha. The filling had been introduced with as little direct pressure upon the nerve as possible: but it was removed, and replaced by a filling of *plaster of Paris*, intending, if it caused no pain, to remove the bulk of it, and fill with gutta percha. In a few days the patient returned, and gave me much satisfaction by saying that his tooth had been perfectly easy, had not caused the slightest pain since last filled. The plaster seemed to soothe the nerve, and a layer was left to cap the pulp, while the rest of the cavity was filled with gutta percha. He was then dismissed for some three months. At the end of that time he returned to have a permanent filling inserted, assuring me that he had not had the slightest trouble in his tooth. I congratulated myself, and thought I had discovered a good thing with which to cap exposed nerves. But was much surprised when, upon examination, the reluctant conclusion was forced upon me that the nerve was dead, and the alveo-dental membrane apparently dead and suppurating. Upon removing the filling, a little black spot revealed the point of exposure, which could not be seen whilst the nerve was alive. Now it is strange that the nerve should die after the introduction of the plaster without causing any pain, and I have thought that if the tooth had been filled with plaster in the first place, it might have been successful. And here let me mention what I consider the unfitness of gutta percha for this purpose. My experience with it indicates that it is a very irritating substance. Why it should be so, it is difficult to determine, unless it absorbs the saliva, and thus expanding, presses upon the nerve. That it does so, its efficacy in preserving the walls of a cavity, for so long a time, would seem to indicate.

This case has been detailed to show the difficulty of saving an exposed nerve alive. By my efforts to save this one, I not only lost the nerve, but the investing membrane also. Had the nerve been destroyed, this membrane might have been saved; thus contributing much to the usefulness of the tooth.

The only case in which I would cap an exposed nerve is when, in excavating, the nerve is slightly exposed; and when it exhibits that low degree of vitality which suffers contact without causing much pain. And

even in such a case would not have much confidence, for all that have come under my observation after being so treated, have either filled me with doubt, or convinced me of failure. The patient usually complains of a slight, dull ache, constant or at intervals; the sure indication of the progress of some change: it may be the recuperative efforts of the pulp, secreting a new deposit of dentine for its own protection, but in my opinion it is its expiring struggles. If the nerve has previously ached, or if upon exposure it causes that intense pain which it usually does, no one should hesitate a moment to destroy it. My mode of doing this, is to employ arsenic, mixed with equal quantities of morphia and creasote. When the practice of fang filling was first taught to me, I was assured the only safe way to destroy the nerve was by extirpation; and so inflicted the tortures of this operation upon every case which came under my charge. What, though it did cause the patient some pain, it was thought frivolous to regard this, when such important results were involved. But the difficulty in getting my patients to submit to it, and the success met with not warranting it, induced me to return to arsenic; and now think that since that method has been adopted, I have been more successful than when extirpation was practiced. All will admit that it is important to preserve the alveo-dental membrane alive, and there is more danger to be apprehended to this membrane from irritation produced by extirpation, than any that can arise from the use of arsenic. I have heard of extirpating the nerve entire, and at once, and must say that with me it has never been successfully accomplished—have succeeded in drawing some blood, and in extracting a small portion of the nerve at a time, keeping it lingering along for days, thus irritating the alveo-dental membrane, producing inflammation, and often its death.

Arsenic is now used by me on a pledget of cotton about the size of a pin's head, applied as directly over the nerve as possible; then seal up the cavity with wax and allow it to remain for twenty-four hours, then replace it with cotton and creasote, which let remain for about a week. At the end of this time the nerve is so toughened that it can generally be easily extracted.

My reason for extirpating nerves was that arsenic was liable to penetrate the structure of the tooth and attack the investing membrane. From my own experience I am not sure that this is correct; on the contrary it fails to confirm it. But I have been shown teeth extracted by others, their loss being attributed to the use of arsenic. Upon being split open, the centre of the tooth around the pulp chamber was dyed quite yellow; but this could be attributed more to the use of iodine than arsenic. Whichever it was, it must have been used very injudiciously. A tooth may be destroyed by the use of that which, judiciously employed, would be

a benefit, just as a person may be poisoned by what, in proper quantities, would give him new life and health. That there are teeth lost from this cause is not improbable.

It was formerly my habit to treat the tooth with creasote for a week or so after the nerve was removed: but I can see no good reason for the practice, unless it is an ulcerated tooth. In this case, the alveo-dental membrane being dead and suppurating, the application of creasote will overcome the secretion of pus, and by its preservative qualities prevent further suppuration, at least, until the influence of the creasote is dissipated. But there is no such reason as this for its use when the investing membrane is alive and healthy. On the contrary, I should consider this condition an argument against its use. If creasote preserves dead tissues, it will also destroy the vitality of live ones. It prevents decompositon, but is destructive to vitality. What reason then can be given for its continued employment when the investing membrane is in this condition?

The sooner a healthy tooth is filled after its nerve is removed, and with the less doctoring, the better. My habit lately is, after the nerve is removed to wipe out the cavity with creasote, introduce a little cotton saturated with creasote, no more than the cotton will absorb, into each fang, and fill. This particle of cotton will never decompose, and as it will retain its creasote for an indefinite period, it will be a preventative to the decomposition of any particle of nerve which may be left in the fang.

New York City.

CAOUTCHOUC.

ITS HISTORY, PROPERTIES; ITS COMBINATIONS FORMING HARD RUBBER, AND THE MANNER OF WORKING IT FOR DENTAL PURPOSES.

BY E. WILDMAN, M. D., D. D. S.

Hard rubber having been so generally adopted as a base for artificial dentures, I deem that it may prove interesting and instructive to the profession, to treat upon it somewhat in detail, in accordance with the above caption.

Caoutchouc, called gum-elastic, and also India rubber, has been known for a long period of time to the natives of the Old and New World, in Hindostan and South America. "It was not, however, until the expedition of the French Academicians to South America, in 1735, that its properties and nature were made known in Europe, by a memoir upon it, by M. de la Condamine. This notice of this substance excited little attention, and subsequently notices of this substance were sent to the French Academy, in 1751, by M. Fresnau, and in 1768, by M. Macquer." At the latter end of the last century, and in the beginning of this, it was

introduced into Europe in small quantities, and on account of its being chiefly used for rubbing out lead-pencil marks, and coming from the ndies, it acquired the name of India rubber.

The particular species of plants which are employed for procuring India rubber are very numerous, and it is probable that many yield it which are not known to botanists. A great majority grow in tropical regions, yet the temperate are not without their representatives.

The tree which supplies the most caoutchouc in Continental India, is the *Ficus Elastica*, a tree belonging to the order of *Moraceæ*. It is exceedingly abundant in Assam, and also in the District of Naudwar. According to a report published by Mr. William Griffith, "this remarkable species of fig tree is either solitary, or in two-fold or three-fold groups. It is larger and more umbrageous than any of the other trees in the extensive forests where it abounds, and may be distinguished from the other trees at a distance of several miles, by the picturesque appearance produced by its dense, huge and lofty crown. The main trunk of one was carefully measured, and was found to have a circumference of 74 feet, while the girth of the main trunk, along with the supports around it, was 120 feet. The area covered by the expanded branches had a circumference of 610 feet; the height of the central tree was 100 feet."

"It has been estimated, after an accurate survey, that there are 43,240 such noble trees within a length of 30 miles, and breadth of 8 miles, of the forest near Ferozepoor in the district of Chardwar, in Assam."

"Lieutenant Veitch discovered that the *Ficus Elastica* is equally abundant in the District of Naudwar. Its geographical range in Assam seems to be between 25 deg. 10 min. and 27 deg. 20 min., of north latitude, and between 90 deg. 40 min. and 95 deg. 30 min., of east longitude. It occurs on the slopes of the hills, up to the elevation of probably 22,500 feet."

This tree is of the banyan tribe, famed for "its pillared shade, where the daughters grow about the mother tree." Species of this genus afford grateful shade in the tropical regions of America, as well as in Asia. Roxburgh says the wood of this tree is brown, soft and porous, and only fit for fuel, and that it bears figs (which do not appear to be eaten) that grow in pairs from the base of the broad, leathery, shining, deep green leaves; when ripe they are oval, about the size of an olive, smooth, and of a green-yellowish color.

Species of the *Ficus* produce the Caoutchouc brought from Java, and the *Ficus Radula*, *F. Eliptica* and *F. Prinoides* are among those affording a portion of that obtained in America.

All the species of *Ficus* yield caoutchouc to a greater or less extent in

their milky juices, and even the common fig of Europe (*Ficus Carica*) contains it.

Next to the *Moraceæ*, the order of *Euphorbiaceæ* yields the largest quantity of caoutchouc. The *Siphonia Elastica* belonging to this order is found in Guiana, Brazil, and extending over a large district of Central America. According to Dr. Lindley, this tree produces the Para rubber, which is considered the best that is brought to the markets of America or Europe. He describes this tree as growing from fifty to sixty feet in height, and from two to two and a half feet in diameter. The bark grayish, and not thick; the wood white and light. The leaves each consist of three or more blunt leaflets attached by a joint to a slender foot-stalk, and having an oblong form, narrowing to the base; they are green above, but ash colored on the under side. The flowers are small, greenish, in long bunches: the fruit about as big as a walnut, with the rind that separates of itself, and a hard bony shell splitting with elasticity into half a dozen pieces. In each cavity of the fruit are found from one to three seeds, about as large as filberts, but shining, and mottled with brown upon gray in the manner of castor oil seeds. They are agreeable to the taste, and are stored up by the Indians, who experience no inconvenience from eating them, notwithstanding their relation to such acrid plants as the West Indian purging nut, or the Tiglium bushes of the East Indies.

"It was long supposed that there was only one species of *Siphonia*, but Mr. Bruce, a distinguished botanist, in his investigations in Brazil, made botanists acquainted with several others, viz: *Siphonia Lutea*—found near Panuré on the river Uapes; *Siphonia Discolor*—from the north bank of the Amazon, at its junction with the Rio Negro; and also from Panuré; *S. Paucefolia*, *S. Rigidifolia*, from Panuré, and the *S. Spruceana*, from Santarem, in the province of Para."

To another order, *Apocynaceæ*, we are indebted for the caoutchouc which is brought from the islands of the Indian Archipelago. The plant from which this substance is obtained, in those districts, is the *Urceola Elastica*, a climbing plant of rapid growth and of gigantic dimensions. A single tree (or vine) is said to yield, by tapping, from fifty to sixty pounds of caoutchouc annually.

Mr. James Howison, a surgeon residing in Prince of Wales Island, gives a description of this plant. He says, "this vine was about as thick as a man's arm, with a strong cracked ash-colored bark. It had joints at a small distance from each other, often sent out roots, seldom branches, ran along the ground to a great length, and at last meeting with a tree, ascended it, rose to the highest branches into the open air. It was found in great plenty at the foot of the mountains, upon a red clay mixed with

sand, in situations completely shaded. It was afterwards met with on the west coast of Sumatra, and other Malay countries."

Roxburgh describes its leaves as being opposite on short stalks, oblong, pointed, a little rough, with a few scattered white hairs on the under side. The flowers are small, of a dull greenish color, and are produced at the ends of the shoots in bunches, like those of the lilac bush. The seed vessel is latterly compressed into the form of a turnip, is wrinkled, leathery, about three inches in the greatest diameter. The seeds are numerous and immersed in pulp.

Many other plants of this order yield caoutchouc, and of those given on good authority are the *Collophora Utilus* and *Cameraria Latifolia* o South America; *Vahea Gummifera* of Madagascar, and the *Willughbea Edulus* of the East Indies.

To this order belongs the cow tree, (or Hya-Hya as it is called by the natives,) *Tabernæmontana Utilis* of tropical America, which yields a milky juice, which is collected and drank by the natives of the district in which it grows.

Also, to this order belongs the *Asclepeas*, or milk-weed, from which I have obtained caoutchouc in small quantities.

To this order belongs the *Hancornia Speciosa*, a tree very common about Pernambuco and Olinda, and it is also found at Bahia. Gardner describes it "as attaining the size of an ordinary apple tree, though its small leaves and drooping branches gives it more the appearance of the weeping birch. The fruit is yellow, a little streaked with red on one side, about the size of an Orleans plum, and of a delicious flavor. When in season it is brought in great quantities to Pernambuco for sale." According to Mr. Clausen, "this tree is found on the high plateaux of South America, between 10° and 12° south latitude, at the height of from three thousand to five thousand feet above the sea. The leaves are opposite each other on slender branches, about two inches long, oblong, suddenly ending in a blunt point, shining above, but on the under side pale, with fine parallel veins. The flowers are slender, tubular, about one and a half inches long, and growing singly from among the leaves."

Mr. Paul B. DuChaillu, in his explorations in equatorial Africa, says, "The caoutchouc of Africa is obtained from a vine (called *dambo* by the natives,) and not from a tree. The vine is of immense length, and has singularly few leaves and only at the extremity of the vine. The leaves are broad, dark green, and lance shaped. The bark is rough, and of a brownish hue. A large vine is often five inches in diameter at the base. To get the best India rubber, the milk must be taken from the bark, without wounding the wood, as this has a juice of its own, which mixing with the milk, spoils it. The recently growing demand for this product,

induced the natives to adulterate it with the milky juices of various trees and vines found in these forests. This has seriously injured their trade, but will probably result in saving this valuable vine from extinction in this part of the country. This disaster was like to be caused by the foolish improvidence of the native caoutchouc collectors, who bled the vines in so many places as to exhaust them of their life-blood. In this manner, some years ago, thousands of vines were destroyed annually. This vine is of slow growth, and the milk of the young vine is thin and watery. The caoutchouc vine grows equally well in low and high ground, but is found most plentifully in the valleys and bottom lands along the Muni and other rivers. The milk taken from the vines growing on high lands is, however, thicker, and yields a better article of India rubber."

The same author says, "the whole country around Lake Anengue is literally filled with the India-rubber vine. Immense quantities of the best caoutchouc might be got and with very little trouble, if only the natives had some one to show them how to gather it without destroying the vines, and without getting it mixed with impure matter as to destroy its commercial value."

TO BE CONTINUED.

REVIEW OF A MANUAL ON EXTRACTING TEETH.

BY GEO. T. BARKER, D. D. S.

The author of this work, Dr. Abraham Robertson, is doubtless familiarly known to the readers of this journal, as a careful writer and frequent contributor to the Dental (periodical) literature of the day. The work is intended to be a hand-book for the dentist, and to impart such *practical* information as may be of value in the performance of this necessary dental operation. This manual, we are told, in his prefatory remarks, is the first work, so far as he is aware, that is devoted exclusively to the consideration of this subject, all that has been written being comprised in a few minor articles in dental journals, and an occasional chapter in treatise on dental surgery. The demand, therefore, for a practical work on extracting teeth must be fully apparent.

The first chapter is devoted to general introductory remarks, as to the unsuitable instruments of the ancients, the inadequate amount of anatomical knowledge possessed by them; the extraction of teeth being generally consigned to the barbers, the learned physician considering it unworthy of attention. Dr. R. here states, in the following clear and concise manner the object of this work.

"What we propose to do, is to describe and 'illustrate the instruments best adapted to the perfect accomplishment of the objects under consideration—the entire removal of every tooth, and root of a tooth that requires

extraction, with the least amount of force by the operator, with the least possible injury to the surrounding parts, and consequently with the least amount of present pain and after suffering to the patient, and the most appropriate methods of applying and using such instruments to effect such results.'"

CHAPTER II.—*Anatomy of the Jaws and Teeth.*

This chapter is ably written, the anatomy of the structures being considered in a plain and comprehensive manner. The intimate relations of the parts to each other is treated at length, as is also the special anatomy of the teeth, giving evidence of careful study and investigation.

CHAPTER III.—*Pathology of Tooth-ache.*

Caries of the teeth is first taken up, with a short description of the various causes which tend to induce this pathological condition. We specially recommend this portion of the work to a careful perusal. We make the following quotation:

"Dyspeptics who are troubled with great acidity of the stomach, and with frequent regurgitations of such fluid into the mouth, as is a very common occurrence in such cases, are almost always sufferers from this cause. Persons taking acids as medicines, without taking proper care to avoid their coming in contact with their teeth, or immediately to neutralize the acid, suffer in the same manner. The saliva in its normal state, including the saliva proper and the buccal mucus, is alkaline. The mucus is slightly acid, while the secretion of the glands, which is by far the most abundant secretion, is alkaline."

The general effect of a diseased condition of the human economy in modifying the normal secretions of the oral cavity, the effects of medicines, the mineral acids, and their influence in establishing caries, imperfect organization of the teeth, and effect of mechanical violence, receive from the author appropriate attention, the agency of each being detailed in the production of dental caries. Section 2 of this chapter treats of the varities of tooth-ache and their causes, viz: 1st. Tooth-ache from exposure of the nerve. 2d. From inflammation of the nerve without its direct exposure, resulting in the formation of pus in the nerve canal, abcess, &c. 3d. From inflammation of its periosteum. 4th. From inflammation of its dentine. 5th. From sympathy or reflex irritation—neuralgic tooth-ache. 6th. From exostosis. 7th. From accidents.

In treating of the second variety, Dr. R. gives an excellent description of the pathology of periostitis and alveolar abcess, and it is referred to as worthy of careful study and perusal. In the third variety the predisposing and exciting causes to inflammation of the periosteum are considered. He then says, "This is the kind of tooth-ache that has sometimes thought to be 'epidemic.' These 'epidemics' occur after long raw storms, or other great atmospheric changes, and as teeth in this condition are always liable to be affected by 'taking cold,' they are usually most troublesome

after such changes, and as there are always a great many of them in every community, such epidemics are pretty frequent." Variety number four deserves from us an extended notice, and yet, after carefully re-reading it, we can see no point that a good quotation can be made, by which our readers can form an adequate conception of its merits. Each paragraph gives evidence of thought and study, and we esteem it a most clear and logical exposition of the possibility of human dentine to take on *inflammation*, and is calculated to overthrow the erroneous idea which has been persistently expounded by certain writers on this subject, that in consequence of the calibre of the tubuli of the dentine being so small as to exclude the red corpuscles; and the microscope, except in rare cases, disclosing no vessels—human dentine could not inflame; regarding the condition known as *sensitive dentine*, as a physiological, rather than a pathological phenomenon. The remaining varieties of tooth-ache are interestingly considered.

Chapter IV treats of instruments used for extracting teeth, and the proper method of using them, with instructions as to the adaptiveness of certain shaped instruments, and the best modes of seizing a tooth and removing it from its socket. The remaining chapters of this valuable little work are devoted to the subject of lancing the gums, accidents attendant upon the extraction of teeth—their remedies, and anæsthetics. The general typography of the work is excellent, the only exception to the general good character is in the illustrations, particularly of the chapter on the Anatomy of the Jaws and Teeth, these illustrations are inferior, and detract from the neat appearance of the work. It is published by Messrs. Lindsay & Blakiston.

"DO YOU INSURE YOUR WORK?"

BY JOHN D. WINGATE.

This question is often asked by anxious patients, who are about deciding that something must be done for the preservation of their teeth. There are plenty of operators who insure all of their work; and could, if required, insure anything, from a long life to the painless extraction of the most difficult molar. Unfortunately, the insurance of this class of operators does not amount to anything more than to deceive unwary patients, who, after being disappointed in their expectations, put down dentistry as the chief of humbugs. A few years ago, a man operated not far from this town, who was so infatuated with the superiority of his work, that he thought it could not give way; and, of course did not hesitate to insure. On his patients presenting themselves with fillings out, he would positively assert they were drilled out; and, consequently, he was justified in

not refilling. Much insurance is needed to keep the authors of such operations afloat. In an intelligent community, the physician is not required to insure cures. It is expected of him, that he does all in his power to bring about the much desired cure; and he reasonably expects to be rewarded for the amount of labor and skill he bestows on the diseased. When a dentist does his duty, he also has a right to look for his remuneration. It should be one of the principal aims of the dentist, to inspire confidence in his patients, by doing his work in a workmanlike manner; and a case is not properly finished until it gives evidence of this good result, as no half-way operations should be tolerated by any operator who cares for the integrity of his profession. Neither should any one presume to fill the place of a dentist until he knows he has the requisite qualifications. It must be a troublesome life, that pretenders lead, when they are constantly harassed with unsatisfactory work, being constantly brought back to them, and for want of new employment are obliged to change from place to place, where they are not known. There is no reason why a man should fail when a reasonable case presents itself, and a difficult operation should under no circumstances be insured, as the risk of reputation involved, should rather throw the responsibility of a failure on the patient than the operator. If the operator, in a candid and brief manner, gives a reasonable explanation why the operation may not succeed, the intelligent patient is generally willing to take the risk upon himself, considering it a favor that the operation is undertaken at all.

It seems perfection is sought alone with the dental profession; but, it may be well enough for patients to understand, that dentists, like other human beings, are subject to frailties and infirmities; that their work may also yield to time and hard usage.

Should a filling, unfortunately, slip out where a good result could be anticipated, the operator should in humility replace it as soon as possible, whether it lasted only a year, or even longer, and apologize to the patient for the inconvenience to which he was subjected, as the operation was an imperfect one.

When an artificial denture is wanted, the anxious candidate often wishes an insurance that he or she will be able to eat on it. It is well enough to inform the patient, that if he is possessed of sufficient skill there will be no trouble on that score, as the rest of the patients eat on theirs. But it is hard to tell the amount of skill each patient possesses; that the case will be put up in the highest style of art; and as strong as the materials will permit. Should he not choose to have the case with such explanations, his expectations may not easily be realized; and, it is better not to have such patronage.

BELLEFONTE, PA.

CASES OF FACIAL, NASAL AND PALATINE DEFECTS.

At a recent meeting of the Pennsylvania Association of Dental Surgeons, the above subject being under consideration, Dr. Wm. H. Hoopes, of Baltimore, presented to notice several cases on this subject, which, being considered of special interest, are accordingly detailed. The first case introduced to notice, the mask of which was exhibited to the meeting, was where, from secondary syphilis, extensive loss of the soft tissues of the face had taken place. The following muscles were entirely removed by the disease on the left side, and partially upon the right; *compressor naris, levator anguli oris, levator labii alæque nasi superioris, zygomaticus major and minor, orbicularis oris, depressor anguli oris, depressor labii inferioris*, a portion of the buccinator on left side, the nasal cartilages, septum, and a portion of the left malar bone. The jaws were firmly ankylozed, so that nourishment could only be obtained by means of a pipe inserted between the teeth. He remarked that it was impossible to give an adequate description of the appearance of the person, the disfigurement might perhaps be imagined when it was considered how great had been the destruction in the soft tissues; from the loss of the lips, the teeth and alveolus were constantly exposed, giving the person a most hideous expression. What more than all complicated the case was, the constant trickling of saliva from the exposed duct of *steno*, the main duct of the parotid gland. He proposed to treat the case in the following manner, restore the lost parts as nearly as possible by means of an artificial substitute of vulcanized rubber, consisting of a nose, lips and chin, painted to resemble the remaining healthy structures, also forming on the mask, at its dependent portion, a cup-like cavity, into which the saliva might pass and there be retained, to be removed from time to time. He proposed to retain the mask upon the face by means of a strong pair of spectacles, the bows of which would clasp at the back of the head.

The second case referred to by Dr. Hoopes, was one treated by him in the year 1860, and published at that time in the American Journal of Dental Science, an abstract of which is here appended. H. R.———, aged 40 years, had enjoyed good health until about fifteen years ago, when he contracted primary syphilis; four years subsequently the disease, in a tertiary form, attacked the internal surface of the nasal bone, and continued to spread for some five years, when, fortunately, its progress was arrested, though not until it had committed the most terrible destruction of the bones and soft parts of the face. The following cut inadequately presents the appearance of the face.

It may be better understood by a description. The lower margin of the nasal bones are destroyed with the entire vomer, the nasal cartilage and a portion of the septum. The left inferior turbinated bone is gone,

and a portion of that of the right side. The anterior portion of the malar bone is destroyed on the left side nearly reaching the antrum, also the superior alveolar process, leaving a mere rim, with three molar teeth on one side and two on the other; the central portion of the palatine bones is also gone, leaving an open space about the size of a half dollar piece. Of the soft parts the destruction has not been less extensive. The upper lip is destroyed, except at the angles of the mouth; and ulceration had taken away much of the soft tissues of the posterior nares. The muscles of the upper lip and face that are partially destroyed are the *orbicularis oris*, *levator labii superioris alæque nasi*, and on the left side a part of the *zygomatic and levator anguli oris*. It should be remembered that the sketch given reverses the side of the face.

On looking inwards and downwards, the parts presented a deep, large cavity; the motions of the uvula could be seen by looking into the nose, and the tongue closed the opening through the palatine bones. Of course speech and deglutition would have been impossible, had not the patient continully kept a large piece of raw cotton in this opening. The lower lip had also begun to suffer the ravages of the fearful disease, but it was arrested at this period, and this lip presented an enlarged appearance, from the healing of a large-granulated surface.

The first step in the process of making a mechanical contrivance to hide this hideous deformity, was to make a cast in plaster of the anterior portion

of the face, and another of the mouth. A gold plate was then made, fitting the roof of the mouth; and upon this were inserted all the teeth that were deficient, and this plate was clasped to the remaining molar teeth. A model of an artificial nose and upper lip was then made, as near the natural form as possible. A cast of this model was filled with hard rubber, which was then vulcanized. A gold bar was attached to the inside of the artificial nose, which was made more firm by a cross-bar. The opening through the palatine bones gave an opportunity to secure the nose to the plate, this was done by attaching a short tube to the plate and passing the bar through it. The plate was then placed in the mouth, the nose was attached to the face, and the bar was passed through the tube, which held it firmly in position. The stiff unnatural appearance of the upper lip was hidden by a heavy artificial moustache. The connection between the artificial and natural nose was concealed by the bow of a pair of spectacles. The artificial nose was then given a life-like color, and the illusion was complete.

This appliance so fully answered the purpose, that the wearer had, at subsequent times since its introduction, assured him that it was perfectly priceless, and that he felt, if possible, like a new man. Being of a genial and lively temperament, he was, previous to the introduction of the artificial appliance, debarred by his disgusting appearance from all society, being emphatically the "observed of all observers." He had, therefore, contracted the habit, when walking in the street, of pressing over his face

a large slouched hat, and carrying his head as low as possible upon his chest. On first placing the appliance in position, they started together for the photographic artist who was to take his picture. While walking down the street, for the first few squares, he noticed that he adopted his old habit of walking, with head down, and covered as much as possible. He soon, however, remarked to the Doctor, that he believed "no one was looking at him," and, before they reached their place of destination, the man had straightened himself up several inches, and carried his head as high as any one; he could now set at his hotel table without his opposite neighbor remarking the artificial substitute for his lost nose and lips. His speech was also greatly improved. Dr. Hoopes detailed an interesting case of artificial nose inserted by him the previous week. As it had, however, no special points of interest over the case just recited, he would not do more than present to notice the photographs of the patient before and after application of the mechanical substitute.

At the close of the meeting, a unanimous vote of thanks, on motion of Dr. J. W. Van Osten, was tendered to Dr. Hoopes, for the elucidation of the cases so ably treated by him in this department of surgical dentistry. A vote of thanks was also tendered to Dr. Wildman, who presented models of a case of great interest, recently treated by him; it will appear in our next number. G. T. B.

DENTAL GOSSIP.

The Dental Times.—I have read with great pleasure the first two issues of the TIMES, and I wish to say that the very sensible, practical and pointed character of the articles which have appeared in it, added to the fact, that each number is filled with original matter supplied principally by those engaged in teaching, as well as practicing dentistry, greatly enhances its value, and should secure for it what it eminently deserves, a wide circulation and a generous support.

The general arrangement and the mechanical quality of the journal, are all that can be desired, yet the absence of an editorial department is rather singular; it is like the play of Hamlet with the character of Hamlet omitted. I believe in such special department for the single reason, if for no other, that the editor or editors can there have more social and familiar and direct intercourse with his readers. Again, there are many special notices, such as new books, improvements, &c., that should find place somewhere, and no place so appropriate as under an editorial head.

Esprit du corps.—In my brief professional reading I came across the following precious morsel in the proceedings of the New York Academy of Medicine, and which was copied into one of our Dental Journals without any suitable comment. The dentist, whose remarks I append, I

think I knew, many years since, and who had the benefit, some twenty-five years ago, of an able and an honest preceptor,—John Burdell,—a man who not only respected his profession, but took pride and labored hard in its advancement. The discussion in the Academy's proceedings, in which the dentist participated, was in reference to an appliance made by the dentist himself for the cure of a fractured jaw. In answer to a question from one of the medical gentlemen as to the form in which the article could be purchased, the dentist replied: (the small capitals are my own.)

"There are a great many details about getting an accurate cast of the jaw, which one not acquainted with mechanical dentistry would not be prepared for. The surgeon should find the BRAINS, while the dentist attends to the mechanical part."

Now, I can look upon this in no other light than as one of the most pitiful and lamentable exhibitions of sycophancy and toadyism to the medical, as well as a gross insult to his own, the dental profession. Surely it is an unclean bird that fouls its own nest.

Dentists in the Army.—I have been told by a military officer that dentists are greatly needed in the army. That he had repeated occasions to give men furloughs to go to Washington to have teeth filled and otherwise treated; for very many in our army are sufficiently intelligent to know that troublesome or decayed teeth may be saved, and are therefore unwilling to have them sacrificed by extraction, which is all the army surgeon can do; therefore, the want of an intelligent dentist is apparent, who, I have no question, could make it mutually advantageous, (as he would charge for his operations,) by remaining with the army, which, no doubt, he would be permitted to do on making proper representations to those in immediate authority. I trust this hint may be acted upon, to the advantage of both soldier and dentist. Such a procedure would furnish an unanswerable argument in favor of what the profession has been long contending for, Govermental employment of dentists in the army.

Pennsylvania College of Dental Surgery.—On visiting this school recently, I was glad to find so full and intelligent a class in attendance on the present course of lectures. I see in this not only encouragement to those engaged in teaching, (a matter in itself of no small importance,) but satisfactory evidence of a prevailing disposition on the part of those about entering the profession, as well as many who have been in practice, to fully prepare themselves for an able and an intelligent discharge of its duties and responsibilities. All this tends directly and powerfully toward the establishment of the profession on its proper basis; and to give it that character and influence it can and eventually must maintain and exert.

The Proceedings of the Pennsylvania Association of Dental Surgeons

for November, as reported in the "Dental Cosmos" for December, contains some very queer things. The reporter would seem to have taken playful liberties with the remarks of one of the speakers, particularly in making him say, when describing the effects of syphilis in a patient to whom he had supplied a NOSE, that it had deprived "the unfortunate man of the *vomer*, the *nasal*, *turbinated*, *palatine* processes of SUB-MAXILLARY, and a portion of *the malar bones*," &c., the italics and small capitals I have added.

This calls to mind the exploits of a man who prided himself on being a great hunter, one of whose wonderful performances was the shooting of a deer by sending the ball through the hindfoot into the head. A look of credulity on the part of the company brought his servant to his rescue, who, after puzzling his brains for awhile, explained the phenomenon by saying, that the deer was scratching his head with his hind foot just as the ball struck him. Subsequently, the servant expostulated with his master, and begged of him not to tell any more stories in which it was "so hard to make both ends meet."

Another wonderful thing is given by said reporter. The same speaker, on the same case, is made to say that he took "*one* pound of paraffine and wax, previously placed in warm water, to bring it to the desirable plastic condition, was placed upon its surface, introduced into the mouth, and pressed well up against the arch," &c. Now the patient, if without a nose, was surely not without a mouth, else he could not have received a *pound* of wax into that orifice: but, seriously, such reports are calculated to bring ridicule upon those who speak, and are, to say the least of them, a waste of paper and printer's ink, and of the reader's time.

Respectfully, O. U. C.

PHILADELPHIA, Dec., 1863.

NOTE.—Previous to the reception of the above article, the publishers of the DENTAL TIMES had recognized the want of an editorial department, and had decided to introduce it in the present number.

DENTAL CONVENTION.

A convention of the dentists in the towns and cities in the Merrimack Valley was held at the Citizens' Committee Room, Huntingdon Hall, Lowell, on Thursday, October 29th. Dr. A. Lawrence, of Lowell, was elected temporary chairman, and Dr. W. G. Ward, temporary secretary. The following resolution, offered by Dr. Gerry, of Lowell, was unanimously adopted:

Resolved, That we form ourselves into an association, under the name and style of the Merrimack Valley Dental Association.

On motion, a committee of three, consisting of Drs. Boutelle of Manchester, Gerry of Lowell, and Stevens of Haverhill, was appointed to

draft a constitution. The committee attended to that duty, and reported, which report, after slight amendment, was adopted.

On motion, proceeded to ballot for officers of the permanent organization, as provided by the constitution, and the following gentlemen were elected:

President, Dr. A. Lawrence, of Lowell; Vice-Presidents, Dr. D. K. Boutelle of Manchester, S. H. Elliott of Haverhill, E. G. Cummings of Concord; Recording Secretary, Dr. G. H. Gerry of Lowell; Corresponding Secretary, Dr. L. F. Locke of Nashua; Treasurer, Dr. S. Lawrence of Lowell; Executive Committee, Drs. E. F. Rogers and C. Heath of Manchester, F. H. Stevens of Haverhill, S. L. Ward of Lowell, J. H. Kidder of Lawrence.

The President, on taking the chair, addressed the Convention as follows:

Gentlemen of the Merrimack Valley Dental Association:—In accepting the flattering position which your partiality has assigned me, I should do injustice to my better feelings did I not give utterance, very briefly, to a few thoughts which the occasion seems to suggest.

The first is, to tender you my sincere thanks for the honor conferred, with the assurance that I shall endeavor to merit your approbation in the discharge of my official duties, relying, however, largely upon your forbearance and support.

Gentlemen, we meet here to-day as members of a common profession, one dignified by its literary associations and illuminated by the genius of many minds, both of the living and of the dead. A profession, honorable in its claims, useful in its practice, and, as such, endeared to each one of us. We are quite apt to judge of the merits of men, of things, and of acts, by their usefulness. Dentistry, therefore, in its present advanced condition, whether it may be traced to a remote origin, or, whether it be but the product of a day, so long as the admitted fact that it is useful exists, is entitled to our fostering care and support. A profession which a man does not respect, does not desire to see respected, and does not labor assiduously to advance, should at once be abandoned for something more in accordance with his tastes or his qualifications. It is the love of one's profession, coupled with his qualifications therefor, that makes him successful. It was the love of profession, united with unremitting diligence and study, which made Harris, Townsend and others, among the dead, what they were; and many, I might name among the living, what they are.

To a certain extent man is the creature of circumstances, but, if circumstances and not inclination have made the dentist, then has the one party committed a gross mistake, which the other should lose no time in

rectifying. But I am proud in the belief that most of our profession at the present day, scorning such an origin, have risen above that tyrant, and now hold an honorable place in the public estimation, both as skillful dentists and good citizens. In the infancy of our profession, the operator who could produce results which, at this time would be considered as barely passible, such has been the stride of improvement, was regarded as a man of more than ordinary genius. So, too, in the medical profession. Hippocrates, Galen, and others of their time, shone, not so much because they were really stars of the first magnitude, as because of the darkness by which they were surrounded. Then the physician, with his well-culled simples, went from door to door soliciting patronage, and working marvelous cures by anointing the axe that made the wound, or by causing the patient to swallow written cabalistic signs. Dentistry, too, has had its dark ages, its trunk-in-hand itinerant, whose unskillful manipulations will be long remembered by a too-confiding and outraged public. But a brighter day has dawned, and dentistry now stands the peer of any profession, while a better informed and more discerning public stands prepared, in some degree at least, to discriminate between the well qualified, conscientious and skillful dentist, and the ignorant, advertising, brazen-faced charlatan, whose race, unfortunately, has not yet become extinct. Sanctioned by legislative enactment, several Dental Colleges now adorn the land, while in Europe, the rapid advancement of the science is equally apparent and gratifying. Dental Associations, too, under various local names, have come into existence in considerable numbers, both at home and abroad, and the fact that new ones continue to be formed, while none, to my knowledge, with a single exception, have been dissolved, is pretty conclusive evidence of their beneficial tendencies. The single exception referred to, was the "American Society of Dental Surgeons," which, from some defective organism and bad nursing, after a lingering illness, died a few years ago in the house of its friends. Let us hope that no such fate is in reserve for us.

I have said that Dentistry is entitled to our fostering care and support. But how shall we care for and support the profession of our choice? Most certainly, by encouraging correct and enlightened practice, maintaining an unblemished character and urbanity of manners. By an interchange of the courtesies due each other, and the free communication of scientific facts of general importance. By refraining from and discouraging unprofessional practices of all kinds, among which detraction and calumny should be particularly guarded against, as vices militating adversely to that high tone of character and manly respect, both for one's self as well as for others, which every dentist, who lays any claim to good breeding, ought to enjoy and inculcate.

Again, by endeavoring to further enlighten our minds in accumulating knowledge relating to the science which we profess, and, in a word, by adopting the golden rule in our intercourse with each other, and with our patients, shall we best exemplify our care, not only for our profession, but also for ourselves and those we serve.

Gentlemen, allow me to congratulate you on the successful accomplishment of the object for which you have assembled, and on the happy auguries manifested for the future. Let us take high professional ground, and with "labor omnia vincit" for our motto, never fear that our efforts will be crowned with abundant success.

The Convention then adjourned to meet at 2 o'clock, P. M.

The Convention re-assembled at 2 o'clock. On motion, a committee of three, consisting of Drs. Cummings of Concord, and Boutelle and Carleton of Manchester, was appointed to report a list of subjects for discussion at the next meeting. The committee reported the following subjects: "Professional Etiquette," "Filling Teeth," "Vulcanite Work," "Nitrous Oxide," "Dental Fees," and "Mechanical Dentistry," which report was adopted.

The secretary was instructed to furnish a copy of the proceedings of this meeting for publication in the *Dental Cosmos*, DENTAL TIMES, and such other publications as he may deem proper.

Adjourned to meet at Lowell, on the first Thursday in May, 1864.

OBITUARY.

We are called upon to record the death of Henry Leibert, D. D. S., of Norristown, Penna., a graduate of the Pennsylvania College of Dental Surgery of the class of 1861–'62.

Dr. L. was a gentleman of agreeable and pleasing address, also possessing considerable scientific attainments. The circumstances attendant upon his decease are exceedingly painful. We are informed that while prosecuting some experiments with a new kind of gunpowder, of his own invention, an explosion occurred, by which he was so much injured, that death in a few hours was the result. G. T. B.

RECENTLY having had occasion to bend a heavy complicated piece of hard rubber, I endeavored to do so by the method usually pursued, by oiling and holding it above the flame of a spirit lamp; this overheated the thin parts before the thick portions were pliable. I then took a vessel containing lard oil, and heated it until strips of rubber inserted in the oil became pliable; the parts required to be bent were then immersed in the oil, and after remaining there a few minutes were easily shaped without injury. I throw out this suggestion as it may be useful to others.

E. W.

Editorial.

CONTRIBUTIONS TO THE MUSEUM.

The Faculty would respectfully return their thanks to the following gentlemen, to whom they are indebted for recent contributions to the museum of the Pennsylvania College of Dental Surgery.

John R. McCurdy, of Philadelphia, a beautiful specimen of petrified wood, two rich specimens of gold-bearing quartz, and one of silver ore, all from California.

Henry Cowie, of Detroit, Michigan, a fine specimen of native silver in copper, two of native copper, and one of sulphuret of copper, from Lake Superior.

Dr. L. W. Bristol, of Lockport, N. Y., a very fine beaver's head and tail. These are of exceeding large size and are very difficult to obtain—hunters not being willing to be bothered with them—we therefore feel under special obligations.

James W. White, of Philadelphia, a fine specimen of quartz.

Dr. L. Buffett, Cleveland, Ohio, infantile superior and inferior maxiliary, showing the teeth germs.

Alexander O'Callaghan, Cuba, the following preparations: chipojo or biting lizard, alacranes, centipedes, tarantulas and scorpions: also a large collection of valuable minerals.

C. E. Baxter, Maine, a peculiar pair of extracting forceps.

Dr. S. S. Nones, Wilmington, Delaware, a large contribution of valuable minerals from different parts of the world.

Dr. Wm. H. Hoopes, Baltimore, Maryland, plaster models of case of facial, nasal, and palatine defect described in present number of this Journal.

The advertisement of our friends, W. A. Duff & Co., will be found in our columns—this firm, though a new one, is composed of gentlemen of energy and recognized ability in their business. Dr. J. J. Griffith, for many years demonstrator of the Pennsylvania College of Dental Surgery, is a practical tooth manufacturer, and, recognizing the wants of the profession, will make every effort to supply them. We bespeak for the new firm a liberal patronage. G. T. B.

The attention of our readers is directed to the advertisement of Dr. B. Wood's improved plastic metallic filling. The improvement consists in furnishing a material that forms a denser and harder filling than that formerly prepared by him. We have tested its working qualities, and are much pleased with the result. G. T. B.

THROUGH the kindness of Mr. A. S. Reber, I lately received some moulding sand, obtained by him from near Bellefonte, in this state. Dr. Wingate called my attention to it last summer, and extolled it as being superior to ordinary moulding sand.

This sand is of a buff color, very fine, and when pulverized soapstone is employed for parting, instead of charcoal, it may be used without becoming discolored. Mr. Reber recommends the addition of a small portion finely powdered asbestos to give it additional toughness. Upon analysis, I find it composed of 92 per cent. of carbonate of lime, and 8 per cent. of silica and alumina; ordinary moulding sand is composed of 93 to 96 per cent. of silica, and balance of alumina and oxide of iron. It takes a sharp, clean mould, parts well, and from the trials I have made with it can safely recommend it as being greatly superior to ordinary moulding sand. A mould of a finely wrought bas-relief medal in this sand produced a zinc cast, wherein all the fine lines were delineated.

E. W.

TO REMOVE the wiry condition of pluggers after they have been pointed, plunge them several times into a piece of wood or lead, the last named accomplishes the purpose excellently well. G. T. B.

PUBLISHERS' NOTICE.

The present is the third number of the DENTAL TIMES, and though at the outset some misgivings were felt as to its reception by the profession, yet the flattering encouragement it has received, convinces us that the DENTAL TIMES is calculated to be a useful addition to the periodical dental literature; the publishers are therefore stimulated and impelled to increased exertion. Thus far we have sent the Journal to all dentists whose directions we possess in the United States, distributing in the loyal states 4000 copies, and to those who were non-subscribers, have—in consequence of a recent act of Congress—pre-paid the postage on each number.

While anxious to publish and distribute a large edition, we cannot be expected to continue gratuitous distribution, particularly, when the high price of paper, printing, and all the auxiliaries of publishing a Journal are taken into consideration.

We, therefore, would urge the recipients of this Journal to become subscribers. The DENTAL TIMES is published at the low price of ONE DOLLAR per annum, and we would ask our friends to assist us in our list, that our future editions may be equal to our present one. Those who enclose $1 to Dr. C. N. Peirce, 501 North Seventh street, Philadelphia, will receive each number without delay.

THE

DENTAL TIMES.

VOL. I. PHILADELPHIA, APRIL, 1864. No. 4.

PROFICIENCY AND SUCCESS.

BY J. K. W.

Every art, science, or knowledge admits of different degrees of proficiency. There is no practice or avocation that cannot boast of its adepts, or despair of its bunglers. Like advantages do not vouchsafe equal acquirements. Experience does not develope similar training in different cases, and the same opportunities are not fruitful of coincident results. The trite saying that "practice makes perfect," cannot withstand the testimony of the world. It may be the handmaid of improvement, the key to a certain measure of skill and facility, but other conditions are involved in the attainment of true mastership. A good judgment will prove its superiority over a poor one, under any circumstances. Excellent parts, and that which we term the "happy faculty," may win laurels which the inapt hand cannot grasp, though worn by a lifetime of experience. Genius sometimes discloses itself in a very small way, but its presence is unmistakable.

All cannot be masters. Mediocrity creeps into every profession, and unskillfulness into every art. But whatever place or position, circumstance, choice or the fates may have given a man, it should be his business and care to make the most of it. The better he serves it, the better it will serve him. The advice of Franklin is worthy of a constant place in the memory: "Endeavor to be the *first* in your trade or occupation, whatever it may be." Such endeavor will invariably blossom into fruit, and challenge the increasing respect and attention of others. Success sometimes depends on apparently trifling things. And to succeed is, or should be, the aim of all in their chosen occupations. If one cannot achieve equal prosperity and ascendancy with another, it is far from being a reason for refraining from generous effort, thereby courting failure.

Whether dentistry has within its pale any poor practitioners or not, it may be safe to say that all do not enjoy the same repute for excellence. In this, as in other branches of art and practice, the populace are always discriminating. They seek out the recipient of their praise and the victim

of their animadversion, freely bestowing encomiums and sparing not their criticism. Merit cannot slumber in the lap of oblivion. Demerit is a stranger to the felicity of repose. A good reputation finds its way into channels that lead to the ears of all, and the fortunate possessor realizes its value. It cannot go abroad without reaping a harvest. A bad reputation takes the same road, and every tongue volunteers in giving it publicity. It acts upon the sources of patronage like a frost among the blossoms, and a meagre return shows how exacting is the popular judgment and how scrupulous its choice. The former finds protection everywhere, and needs no printed advertisement as a counterpart. The latter in vain enlists the aid of such extraneous helps. A good reputation is the magnet that draws a substantial patronage, and the gaining of this is the culmination of success. Where the door is open for competition, no man can afford to have an indifferent name.

A thorough knowledge of the art and science of dentistry and its collateral relations, with the skill and capacity to give it intelligent application, constitutes the basis of good repute. This is the reward of proper exertion, and a well directed earnestness towards becoming master of the avocation. To be satisfied while there is room for improvement and increased skill, is simply to make ill-success a foregone conclusion. One who is anxious to succeed cannot afford to be ignorant of any branch or part of his profession, nor awkward in its practice. Should there be a doubt in his own mind concerning his proficiency, or a feeling of assurance respecting the completeness of his skill, let him compare his own performances with those of acknowledged adepts. This is a sure way of ascertaining the exact merits of his qualifications, provided a judgment of the matter is reserved for others. An incentive for renewed exertion may be thus afforded, and a higher degree of aptitude prove its value and importance. Public appreciation is the practical test of merit, and let the young dentist so shape his course and perfect his acquirements as to deserve the confidence of the community, and it will not long be withheld. In whatever corner he may choose to locate himself, he will surely be ferreted out, and made to contribute to the popular demand.

There are more reasons than one why every dentist should be a good one. First, on his own account. His vocation is the source of his well-being in society, and a guarantee of the daily necessities, conveniences, and pleasures of life. The more thorough his proficiency, the more fruitful will be his calling of good and substantial results. Second, on account of his patrons. These deserve the exercise of his best judgment and skill. It is needless to suggest instances where persons have been the victims of carelessness, ignorance, or indifference under the hands of the operator. If the profession is too important to be trifled with, it follows

that those who seek its aid and advantages should not become the injured subjects of negligence or inattention. The performance involved should justify the confidence reposed. Third, on account of the profession itself. If it is worth an earnest pursuit, it is worth being regarded with a degree of interest and pride capable of sustaining its reputation, and elevating its standard. The reputation of an art is in the hands of the artist. A profession that is characterized by a high degree of advancement in its various operations, reflects upon its members a national credit and praise. There is a consonance between the standing it enjoys and the estimation in which they are held inclusively, and a heedless disregard on their part towards perfecting themselves in their art and practice, is prejudicial to its universal repute. Dentistry is a worthy and beneficient profession, and it behooves its practitioners, whether young or old, to see that its fame receives no detriment at their hands, but that it shall attain such a state of perfection as to merit a world-wide approbation.

PHILADELPHIA.

CAOUTCHOUC.

ITS HISTORY, PROPERTIES; ITS COMBINATIONS FORMING HARD RUBBER, AND THE MANNER OF WORKING IT FOR DENTAL PURPOSES.

BY E. WILDMAN, M. D., D. D. S.

(Continued from page 118)

The few plants described in the preceding number are the principal of the many that yield caoutchouc of which we have an authentic description.

The description of the *Urceola Elastica* of the Indian Archipelago, given by Mr. Howison, accords very nearly with that of the vine mentioned by DuChaillu as producing the coautchouc of equatorial Africa, and would lead to the inference that they either belong to the same species or are closely allied to each other.

According to the best authorities, the milky juice of the *Ficus Elastica* of Chardwar, is better when drawn from the old than from the young trees, and richer in the cold season than in the hot. It is extracted by making incisions across the bark down to the wood, and may be drawn from the base of the tree to the topmost branches, the quantity which exudes increasing with the height. This bleeding may be repeated every fortnight. Somewhat more than forty-two pounds of juice is reckoned as an average yield of each bleeding of one tree. This bleeding should be confined to the cool months, so as to allow the tree to recuperate during the hot season.

Mr. Griffith says: "that the richest juice is obtained from transverse incisions into the wood of the larger reflex roots which are half exposed above ground, and that it proceeds from the bark alone.

"Beneath the line of incision, the natives of Assam scoop out a hole in the earth, in which they place a leaf of the *Prynium Capitatum* rudely folded up in the form of a cup to catch the juice as it exudes."

A writer, in Para, giving a description of the method of obtaining caoutchouc in that vicinity, says: "the Indians unite together generally in a pretty good number, and proceed to discover some spot in the virgin forest where there are rubber trees. As soon as they have found such a place, they cut paths through the wood to it. This is the sole difficulty experienced in procuring rubber, but it is a great one, as, owing to the fertility of the soil, the vegetation forms an almost closed mass, and every step must be gained by the axe. As soon as this labor is accomplished, they make an incision in the tree, at the height of a man's body from the ground, and arrange rude bowls of clay which holds as much as a tumbler, stick the bowls to the trees a little below the incision, and collect therein the milk running out: such a bowl is filled in about three hours, if the tree be fruitful.

"When the first cutting ceases to yield, they make a second one some distance lower down, and so on till they have exhausted the milk in the tree, which is done by making in all four incisions, at equal distances; they then pour the milk into larger vessels, gather heaps of Urucari or Inaja nuts, which yield a thick oily smoke, and set them on fire; they now begin the manufacturing process by covering the wooden forms for sheets, long and flat bottles, &c., with clay (in order to be able to detach the rubber easily afterwards,) dip the forms into the milk, and hold them over the smoke. As soon as the milk is dry, they dip them a second time, and so on, until the rubber is of sufficient thickness; they then take it off the form, and the rubber is ready for exportation.

"All rubber is manufactured in this manner, the difference in quality depending upon the greater or lesser amount of clay and dirt which has become mixed with the milk. The first manufactured is the best (fine;) and the last, made of milk adulterated with clay which has fallen from the different forms already dipped in, is the worst.

"A tree cannot again be made use of for two years, as it requires that time to recover its exhausted strength.

"There is another way of getting the milk, which is, however, forbidden by the Government, as it destroys the tree. This is, to bind the tree at the top and bottom with willow twigs, and then draw off all the milk, at once, with incisions.

"In the smoking process they have tried different qualities of coals and woods, but without success. Small lots of fine rubber, not smoked, they sell here as mixed; this rubber comes from the interior of the Amazon province where they do not have the above mentioned fruits, and in con-

sequence cannot smoke the rubber perfectly. All Indians give the preference to the nuts."

The juice, as it exudes from the tree, is white or a pale yellow, and a thick creamy looking substance.

According to M. Faraday's approximate analysis, it is composed of

Caoutchouc	31.7
Albuminous precipitate	1.9
Peculiar bitter coloring matter, a highly azotized substance	7.13
Wax, a trace.	
Substance soluble in water, not in alcohol	2.9
Water, acid, &c	56.37

Dr. Ure, in his analysis, found no albumen, and, therefore, considered that it is not a necessary constituent of the juice.

The specific gravity given by Faraday is 1.012.

Dr. Ure found the specific gravity 1.041 of one sample that yielded 20 per cent. of solid caoutchouc, of another 1.017, which yielded 37 per cent. of solid caoutchouc.

Faraday, in experimenting with the juice, found that it mixed freely with water, and that after remaining at rest, a separation took place; a creamy portion rose to the top, whilst a clear aqueous solution remained beneath. He adopted this means to wash the caoutchouc, and remove from it the other substances which had been generally involved in it to a greater or lesser extent during its coagulation.

He added to the juice about four volumes of water, and repeated the washings until the water came away pure, which required four or five washings.

The caoutchouc thus obtained, was at first a soft white solid, almost like a curd, which by pressure exuded much water, became more compact, acquired elasticity, but was still soft, white and opaque. This opacity is due to the water enclosed within its mass, as a further exposure to the air allowed the gradual dissipation of the water, and then the caoutchouc in its pure dry state was a perfectly transparent, colorless, and elastic body, except in thick masses, when a trace of color was perceived. The juice experimented upon by Faraday was an American product.

Dr. Ure, in his experiments with samples of the juice from Assam and Java, found that by mixing the juice with a little more than its own bulk of water and boiling the mixture, the caoutchouc separated in a spongy mass, which formed good caoutchouc by pressure between the folds of a towel. By this process the aloetic extract, and other vegetable matters which concrete in the caoutchouc of commerce and contaminate it, are separated, and an article nearly white and inodorous was obtained. In

the brown solution which remained, after the caoutchouc had been separated in a spongy state, from 100 grains of the richest juice he obtained four grains of concrete aloes.

For preserving the juice from decomposition Wm. Johnson obtained a patent in England, in 1853. The inventor of this method appears to be Henry Lee Norris, of New York.

When the liquid is collected and before it has time to sour from atmospheric exposure, that is to say within three or four hours from the time it exudes from the tree, it is strained into a tin or glass vessel, then is added one ounce of concentrated aqua ammonia to every pound of the juice. When thoroughly mixed, it is put up in air-tight cans or bottles, and so prepared, will remain unchanged a great length of time. When this liquid is poured on a suitable receiving surface of the desired size and form, and subjected to a heat of from 75° to 100° F., to produce a slow evaporation of the aqueous portion, there is procured a solid mass, very elastic and tough, and comparatively transparent or translucent.

These experiments show very conclusively that if a proper method of preparing the juice was adopted, instead of the black caoutchouc of commerce containing aloetic matter, and carbon from the smoking process, we should have an article nearly colorless and transparent.

Much of the caoutchouc of commerce is in the form of shapeless masses. The natives dig a trench in the earth at the foot of the tree which is tapped, to collect the milk as it exudes from the tree. In this rude mould it coagulates, and a part of it is in the form of flasks, slippers, figures of animals, &c. To obtain these forms the natives make a model of the object in clay, dip this model in the juice, when this coating becomes solid, again repeating this process until a coat of the desired thickness is obtained. The mould is then broken and the fragments removed through an orifice left for this purpose.

Du Chaillu states that the natives in the equatorial regions of Africa collect the juice in wooden cups and then pour it into wooden moulds to solidify.

Most of the caoutchouc of commerce is so contaminated with earthy or debris of vegetable matter, introduced by accident or design, that it is not applicable for any use until it has undergone a previous purification.

The crude caoutchouc is purified by submitting it to the action of cylinders with teeth turning in opposite directions, and with unequal velocities, which causes it to undergo a kind of mastication. A small jet of water flows through the apparatus, which prevents the caoutchouc from coalescing and washes out the foreign matter. After the vegetable debris and earthy matter are thus removed, it is masticated dry and then placed in moulds and powerfully compressed to free it from cavities and air bubbles.

These blocks may be cut into sheets or smaller blocks by submitting them to the action of knives moved very rapidly by mechanical action, and the edges of which are kept constantly wet by a jet of water.

During the operation of mastication, or kneading, great heat is disengaged in the alternate condensation and expansion of the caoutchouc. Although the water is cold when it trickles in, it soon becomes boiling hot, and when no water is admitted, the temperature rises much higher.

As caoutchouc suffers very little permanent diminution of its volume by the greatest pressure, this great evolution of heat must be ascribed to the violent intestine movements excited throughout the particles of the elastic mass during the masticating process.

Composition.—Caoutchouc is a hydro-carbon, and, according to the analysis of Dr. Ure, is composed of

Carbon, - - -	90
Hydrogen, - - -	10

being 3 eq. C. to 2 eq. H.

Faraday's analysis does not give so much carbon, being,

Carbon, - - -	87.2
Hydrogen, - - -	12.8

making nearly, C_8, H_7.

Its specific gravity is 0.925.

Properties.—In a recent state of coagulation, and while still in a pulpy condition, caoutchouc possesses a degree of plasticity which admits of its receiving, by the means of moulds, the most varied forms.

Caoutchouc is soft and elastic at the ordinary temperature of the atmosphere, but at the freezing point acquires hardness nearly equal to that of wood. At a temperature of 100° F., it softens without losing its shape, and two freshly cut pieces may be united without leaving a trace of the junction.

Caoutchouc from different sources varies very much in solidity. In works on Chemistry, the melting point is generally set down as a little above the boiling point of water. Dr. Ure says it melts at 248° F. In an experiment upon the effect of heat upon rubber of good quality, I found that at 280° F. it became adhesive, and when cold the elasticity was not impaired. When heated up to 340° it was reduced to a pasty mass, and when cold the elasticity was not entirely destroyed. When melted it will stand a much higher heat without undergoing any further change. When cooled it will not return to its original state but remains semi-fluid.

Melted caoutchouc forms a very good chemical lute, as it adheres readily to glass vessels, and withstands the corrosive action of acid vapors.

Caoutchouc is very inflammable, and burns with a bright flame, giving off a dense volume of black smoke. The natives of the countries which produce it use it for torches.

At 600° F. and upwards, by distillation, it yields several hydro-carbons, varying in their boiling point from 90° to 680° F.

Caoutchoucine, one of the products of this destructive distillation, is one of the best solvents of caoutchouc. Its specific gravity is less than sulphuric ether; is extremely volatile, yet in the state of vapour is heavier than the most ponderous gases, and the vapour may be poured from one vessel to another like water.

Neither chlorine, sulphurous acid gas, muriatic acid gas, ammonia, nor fluosilic acid gas effect it. Cold sulphuric acid acts upon it only slowly. Nitric acid produces the same effect without it is strong. The strongest potash ley does not dissolve it even at a boiling heat. It is insoluble in alcohol. Water will not dissolve it. By long boiling in water it is softened, swells and is more readily soluble in its proper menstua, but by exposure to the air it speedily assumes its former volume and consistency.

Caoutchouc is softened and dissolved in the *fixed oils*, and on exposure to the air does not return to the solid state again.

Spirits of turpentine dissolves it, but on evaporation the caoutchouc remains in a clammy state. In common ether it softens and swells, but does not dissolve.

The best solvents are,

Ether deprived of its alcohol,
Bi-sulphuret of carbon,
Coal naptha,
Chloroform, benzole and
Caoutchoucine.

Caoutchouc, when acted upon by its solvents, first expands greatly before diffusing itself through the solvent. Therefore it requires a large quantity of the solvent in proportion to the caoutchouc to produce a fluid solution.

By the addition of from five to fifty per cent. of alcohol to the menstua, caoutchouc may be brought into a pasty mass with comparatively little expansion.

M. Gerard, of Paris, in 1850, obtained a patent in England for treating gutta percha and caoutchouc in this manner. By the addition of alcohol, he asserts, the particles of the pasty mass are rendered less adherent among themselves, and are easily separated by pressure, retaining the

form resulting from this pressure, and not returning to their ordinary form. On the solvent and alcohol being evaporated, the caoutchouc will return to its original state.

Caoutchouc is acted upon by sulphur when the combination is heated in a manner that is not yet explained by chemists.

Sulphur may be incorporated with caoutchouc by immersing it in sheets in melted sulphur. The sulphur penetrates quite through the caoutchouc, and the color of the caoutchouc will be changed throughout to a yellowish tint.

Sulphur in a fine powder may be mixed with caoutchouc by dusting it on the sheets and passing them through heated rollers, repeatedly, until the whole is thoroughly incorporated.

Sulphur may also be incorporated by the means of a solvent. In this case the desired quantity of sulphur is dissolved in the solvent, which is next added to the caoutchouc, and when the solvent is evaporated, will leave combined with the caoutchouc the requisite quantity of sulphur. Or the caoutchouc may be reduced to a semi-fluid mass by one of its solvents and finely pulverized sulphur then incorporated with it.

These mixtures still retain all the solubility of the caoutchouc in the different menstrua. But when exposed to a certain degree of heat they unite and form a compound possessing properties entirely different from ordinary caoutchouc. It is no longer soluble in the menstrua that dissolves caoutchouc, but is impregnated with them by contact, and swells out like animal membrane when moistened by water; resuming its primitive properties when dried.

It no longer becomes rigid when exposed to the cold, nor does it unite with itself when cut, and resists, without any alteration, a temperature which would have sufficed to transform ordinary caoutchouc into a sticky mass.

Sulphurization or vulcanization may be produced by the action of the chloride of sulphur, diluted in 50 or 60 parts of bi-sulphuret of carbon at a proper temperature. This is done by dipping the pure caoutchouc in the above solution, and allowing it to remain about two minutes, then removing it when dry; repeat as often as necessary to produce the required effect. By this means thin pieces of caoutchouc can be perfectly vulcanized.

According to M. Gaultier De Claubry, if the flower of sulphur and dry hypochlorite of lime be mixed together, and this mixture incorporated with the caoutchouc paste, vulcanization may be effected at the ordinary temperature, or at a gentle heat. By this process it is possible to obtain caoutchouc of any thickness uniformly vulcanized.

TO BE CONTINUED.

TOBACCO AND TEETH.

BY JOHN B. YOUNG, D. D. S.

Does tobacco exercise any influence on the teeth? This question I propounded to myself after reading the brief remarks made on tobacco at the Odontographic Society of Philadelphia, in July, 1863: though it was not the first time my attention had been arrested by the subject, tobacco being my first great stumbling-block when I commenced practice, as will be seen in the sequel.

To treat my subject properly, I shall have to divide it in two parts: first, effects of smoking; second, effects of chewing.

Many, no doubt, will be surprised when I announce that on the teeth of any temperament, smoking has no preservative or destructive effect whatever; it neither hastens nor retards decay. To confirm this unrestricted opinion, I have in my note book sufficient evidence, taken not only from the natives, but from foreigners, and in no country, and under any circumstances, could I find a more convenient season for investigating the present subject. Besides the foreigners, nearly all the native males smoke, some being inveterate consumers of, not steeped cabbage leaves, but "Havana segars" and "Virginia plug;" hence, I have under observation great smokers, medium smokers, and non-smokers, my experience being extensive and varied. A brief view of some cases will, perhaps, help me in impressing the fact. 1st. Male, aged 27, five years ago had one of his molars extracted; he had then never tasted tobacco in any form; was recommended by an old sailor to its use as a preservative; he commenced, firmly believing he would never again have pain; nine months ago he came to be "overhauled," as he said: he had toothache and could not tell where located; on examining, found he had lost four molars and two bicuspids: the remainder of his teeth being very much stained, gums in an unhealthy condition and nine fillings to be put in, one being a nerve exposure, though not the cause of the suffering, for the receding of the gums from several teeth had caused periostitis. This case is evidence of tobacco neither preventing nor retarding decay. 2d case—Male, aged 24, commenced smoking a pipe at the early age of sixteen; has continued, smoking sometimes as many as nine pipe loads during the day; his teeth are perfectly sound, gums unhealthy, absorption having commenced. This is a particularly interesting case, and I have an extensive note, not only on this point which it clearly proves, "tobacco not causing decay," but on the effect produced on developement, physical and mental. These two are only evidences of the daily occurrence. I have seen cases where young men have discontinued the practice and their teeth still continue to decay; others, their teeth remain healthy and far more cleanly.

The evil result to the gums is what the dentist first notices, and when

carefully thought of, must strengthen him in his endeavors to cry down the filthy habit. That it has a most injurious effect, no one, who has practiced for one year in a community where tobacco is used, and seen gums inflamed and receding, particularly from the first superior molars, can deny. In every case, I have noticed the receding of the gums: and veteran smokers, when they don't lose their teeth from decay, always lose them from gomphiasis, caused by smoking. As an example, a gentleman about fifty-six, called on me to have his mouth examined. "I don't know what is the matter, my whole mouth, and system are disordered, and I can't enjoy my meals," were his words. On examining, found the first right inferior molar decayed, the remainder of his molars, eleven in number, entirely free from decay, but so loose that I could have turned them out with my finger; extracted the decayed molar, and told him if he wanted to save the remainder, he must immediately leave off smoking; I would then try my skill on the others, of which I had some hopes. I held out the inducement of recovered health, which was once robust, but is failing; he has no appetite, loathes the greatest delicacies, and can alone cling to his segar; all my endeavors failed to induce him to break off poisoning himself. Sometimes he tells me, "I think I will leave it off, for I am almost convinced it is the cause of my ill health, but when I leave you and go home, I find my son, an M. D., smoking, and I join; he assures me it does me no harm." Certainly when we have an ignorant physician with whom to deal, a dentist can scarcely be heard; as we have not yet arrived at the height which will enable us to speak with success against the ill usages winked at by the medical profession: though I am confident that the time is not far distant when our voices will be heard and heeded; no longer, will erroneous ideas be clung to because the vast majority of the medical gentlemen, who will not trouble themselves to read and learn, countenance them, and because it agrees with the people's wishes. Let us remember, to gain the elevation desired, we must not indulge in chimeras, puzzling the understanding of the young in the profession, but to give plain facts where we can, and philosophize only on a sound basis; let us work for the good of mankind partly, and not for our pockets exclusively; let each step we ascend be a spur to drive us to another and another, until, when our years are drawing to a close, and our brain reels with pleasurable emotions, confident of having used and increased our talent, we will not then give up, but to goad on those we leave behind, with our expiring breath, we'll cry "EXCELSIOR."

Our next divison is chewing. While it exerts no deleterious effects on the gums it will undoubtedly assist decay; though some of our number have stated their belief in its preservative quality, we must put it down to want of thought and not of philosophy—chewing, as the gentleman

would lead us to believe, preserves the teeth from the amount of saliva generated; but we must remember that the saliva is not retained, but ejected at intervals of ten minutes; thus the chewing not only produces a vitiated saliva, the blood being incapable of supplying it in such quantities and with its usual richness, but it deprives the system of the small amount of salts which it contains, thus constantly draining and never supplying. Besides this physiological fact we may observe that chewers have worse teeth than those who do not masticate the weed; for instance, the best teeth in this island are found among the African population who do not chew. On the contrary, among the native negroes, whose lives and subsistence are the same precisely, we find the greatest number of decayed teeth. Again, among our inter-marine population, composed promiscuously of whites, Africans and native blacks, who are not like seamen of other countries, continually on the ocean, months or weeks, but are seldom off shore more than two days at a time, and constantly live on fresh food, their sleeping apartments are more healthy than their huts on shore, they have the same winds and far better fed, yet they all have very bad teeth. To what can it be attributed, if not to tobacco, for they are inveterate chewers? Look at the chemical constituent of tobacco, which, according to reliable authors, consists of, in 10,000 parts, 57 of free mallic acid, besides malate of lime, malate of ammonia, as well as free nitric and citric acids, and tell us what effect it will exercise on the teeth, when stuffed in every crease and crevice in and between the teeth, plenteously mixed with articles of food, (for chewers seldom clean their teeth, satisfying themselves with rinsing,) decomposition takes place of course, acids are set free, which immediately combine with the lime of the teeth, a slow process but sure.

Having shown the effects on the external parts of the teeth, we will now go a little further and see the difficulties with which dentists have to contend, from the tobacco community. Diagnosing, which must always precede an operation, whether for extracting or filling, is rendered difficult to the novice, as persons who chew or smoke have their nerves so deadened by the nicotia, that on probing such a decay, he would be led to suppose it only a case of sensitive dentine—a mistake which I made with the first case I had: so covered was the nerve that after cleaning the cavity out as well as I could, and placing a pledget of cotton, saturated with creasote, and packing another firmly over it, my patient came back in forty-eight hours, and said he had experienced no pain. After filling with gold, patient expressed his belief in the success of the filling, but a month had hardly elapsed when he came back raving with toothache. As the weather was very mild and dry, I knew it could not be periostitis; so I removed the filling, and found what I supposed to be a new deposit of dentine when I

filled, was nothing but the animal tissue covered and blackened with fine bits of tobacco. My practice now, when a tobacco patient presents himself with a sensitive decay, is, to cleanse out the cavity as well as I can, and apply a paste of creasote and arsenic, the combination of morphine causing the pulp to be difficult in destroying, smokers and chewers never having sensitive teeth.

NASSAU, W. I.

FATAL RESULT FROM THE INHALATION OF NITROUS OXIDE.

BY JOSE. R. BRUNET, D. D. S.

On the 11th of January, 1864, Mr. Samuel P. Sears called at my office for the purpose of having two right lower molar teeth extracted. He asked to have the "Laughing Gas" administered, and I proceeded so to do, in the same manner as for any other patient. His general appearance was good, and he told me he had taken chloroform, but did not state at what time, or by whom it had been administered, as I was very busy at the time. The teeth were extracted at 4½, P. M., he being placed under the influence of the gas, but not thoroughly. He did not move during the time of extraction, and he appeared to recover in about five minutes, and as I did not observe any unusual symptoms during or subsequent to the operation, I left him in the chair with an assistant, and went to an adjoining room and administered the same gas to a lady. After so doing, went back to Mr. Sears, who told me he felt sick, and that he had been taken with an attack of the diarrhœa, also expressing a desire for fresh air. Perceiving that he appeared to labor under some difficulty in respiration, Dr. Dane was immediately sent for, who examined him and found his lungs greatly congested. I went and notified his parents, and when I returned he was dead.

A post-mortem examination was made next day, at 12 o'clock, by Dr. George B. Bouton, in the presence of Dr. Dane and others. Both lungs were found bound by old pleuritic adhesions of an exceedingly firm character, the right much more than the left, which was about three-fourths covered. The only portion of the lung tissue which seemed to be available for the purpose of oxygenation was the lower half of the right; all of the rest was so covered with tubercular deposition, patches of hepatization and vomica as to seem comparatively useless. There was also six cavities in the left lung, each of which would contain an average of half a fluid ounce. There was also a mass in the lobe of this lung of an almost cartilaginous consistency, of the bulk of about three ounces, made up apparently of tubercular depositions. All the available portions of the lungs were found greatly congested; a portion of the apex of the right lung was free from blood, its tissue being so changed as not to admit of engorgement of blood.

or the permeation of air. There was no well marked changes in any of the other organs examined, except in the right kidney, a drop of pus being noticed in the pelvis.

Death occurred from congestion of the lungs, occasioned by the nitrous oxide. The gas was pure, having been administered previous to, and after the accident, to different parties. I have also administered to hundreds of patients both ether and chloroform, separately and combined; have also exhibited the nitrous oxide ever since it has been used as an anæsthetic for the purpose of extracting teeth, and though some have exhibited unpleasant symptoms, have never had them, except in this instance, to be attended with fatal results. I have understood from a member of the family of Mr. Sears, that his physician thought it doubtful whether he would last through the winter, as his lungs were so greatly diseased.

I now recommend a thorough examination of every patient to be made before administering the gas, its effects being, I believe, where the system is diseased, the same as that of any other anæsthetic.

New York, Jan. 15, 1864.

DENTAL PERIOSTITIS.

BY EDWIN C. BAXTER, D. D. S.

Dental Periostitis, or inflammation of the alveolo dental membrane, may arise from pressure, as in an improperly articulated artificial denture: irritation of foreign substances, such as gold or other material used in filling approximal cavities being pressed under the gum and carelessly allowed to remain; accumulations of tartar, disintegration of a nerve, the administration of mercury, and various other causes.

Inflammation is an unnatural condition or disease of a part, characterized by an abnormal quantity of blood in the capillaries, and an increase of heat, pain, tumefaction and redness. The increase in temperature is due to increased rapidity in the oxidation of the tissues. Pain is occasioned by the condition in which the nerves are placed by the deviation of the parts from the normal state. Swelling arises from the dilatation of the vessels and exudation of lymph; the dilatation of the vessels also accounting for the redness, the capillaries in their expanded condition allowing the passage of the red corpuscles of the blood. The alveolar periosteum contains some cartilaginous fibres, and is thicker than the periosteum of any other portion of the body. When this becomes the seat of inflammation it swells, and being confined between bony, unyielding walls, the tooth is partially forced from its socket, becoming elongated. At the commencement of the inflammatory action, a slight uneasiness will generally be experienced, which diminishes when the tooth is gently pressed into its socket, but immediately returns upon the removal of the pressure.

The inflammation continuing, the gum becomes tumefied and tender opposite the fang of the affected tooth; there is a tendency to ache when the temperature is considerably increased or diminished, and the pressure which previously gave relief, now becomes absolutely intolerable, and the patient will be liable to violent attacks of pain in the head and face.

Inflammation may be brought to terminate by resolution, which is a return to health, the lymph being absorbed and the inflammatory action subsiding before any morbid change of structure has been effected; and to produce this result various modes of treatment have been adopted, the peculiarities of the case in hand suggesting the proper remedy.

Periostitis is frequently induced by the disintegration of a pulp, in which case the nerve cavity should be opened and thoroughly cleansed to the apex of the fang, after which, a treatment of creasote, nitre, or a solution of creasote and iodine may be used effectively, or local depletion may be resorted to. When periostitis is induced in a sound tooth by pressure, or the presence of a foreign body, the irritating substance should first be removed, then the gums contiguous to the affected tooth freely scarified; or counter-irritation may be induced by making an incision through the gum near the apex of the fang and inserting a pledget of cotton and allowing it to remain. In periostitis caused by pressure in inserting a fang filling, either of the previous methods may be employed, or the application of one or two Spanish leeches to the gum will prove effective, the hemorrhage from the leech bite being very profuse, owing, it is said, to a peculiar secretion left in the wound by the leech, which prevents the coagulation of the blood. Local depletion is the most effective remedy, the efficacy of the leech being due to the quantity of blood abstracted. If the inflammatory action be allowed to progress, alveolar abscess, or termination by suppuration will ensue, when the periosteum will separate from the end of the fang forming a sac, coagulable lymph will be thrown out, the sac will enlarge, and the bony walls of the alveolus be removed by absorption for its accommodation.

Pus is first developed in the centre of the mass of lymph by the disintegration of exudation corpuscles, the idea of its being secreted by the pyogenic membrane being generally discarded. As inflammation progresses, lymph continues to be thrown out and degenerated until an opening for the discharge of the pus is effected, which may be either through the canal of the tooth or the gum; or a fistula may be established through the substance of the cheek. In the superior molars, the plate of bone between the ends of the fangs and the antrum being in some cases very thin, the discharge may effect its escape into the antrum, or the sac itself may protrude into and lay upon the floor of this cavity. In such a case the tooth should be extracted, and the antrum thoroughly cleansed by injecting tepid water through the alveolar opening, and this, in a majority

of cases dependent upon the teeth, will be all the treatment necessary to insure a speedy return to health.

A patient, at present under my charge, of a marked scrofulous diathesis, has suffered with diseased antrum for two years. In this case the tooth was extracted, and an entrance to the antrum, through the alveolus, easily effected. Through this opening the antrum is treated with a solution of nitrate of silver, three grains to the ounce of water, and occasionally diluted Labarraque's solution. This case is daily improving, the offensive odor having nearly disappeared and the discharge diminishing and becoming of a healthy character.

The formation of pus is indicated by the subsidence of acute pain, a dull throbbing ache being experienced instead. The gum also becomes red and tumefied, and upon pressing it with the finger, it will impart a peculiar fluctuating sensation. The abscess should now be freely opened, all the pus evacuated, and a tent of cotton inserted, which should be allowed to remain. Upon the discharge of pus the swelling generally subsides, and though the patient may experience no inconvenience for a time, he is liable to a recurrence of the inflammatory action, when lymph will again be poured out and disintegrated, until the sac is refilled and discharged as before; or there may be a slight but continual discharge for years, unless some means for its prevention be employed. Strict attention is required from the commencement of inflammation; for when it terminates by suppuration, the formation of pus is sometimes very profuse, tunnelling the bone from tooth to tooth, until an abscess of large extent is formed, resulting in death and exfoliation of more or less of the bone, according to the degree to which it is involved. The pus in such a case is generally of a dark color, and almost insupportable odor. Another result of suppuration is a fistula through the cheek, producing a troublesome sore, and when healed a deforming scar remains. The course of a fistula when healed will frequently feel hard like a cord when pressed by the finger. This should be divided by passing a lancet beneath the hardened portion, and cutting from below, upwards, completely severing it; and when the adhesion is considerable, a tent of cotton should be placed between the edges of the wound, thus preventing their approximation and partially relieving the deformity.

In treating cases of external fistula, when the tooth is valuable, the pulp cavity should be opened and all carious matter removed, in order to allow the passage of a broach through the foramen at the apex of the fang. The broach should now be barbed, and a piston formed to fit the canal by wrapping it with cotton, which should be saturated with creasote, or a saturated solution of creasote with iodine, and pumped back and forth in the canal until the agent is forced completely through the fistula, and its effects distinctly visible at its termination.

MAINE.

AMERICAN DENTAL CONVENTION.

The Tenth Annual Session will be held at Detroit, Michigan, commencing TUESDAY, August 2d, 1864.

ORDER OF BUSINESS.

1. Reading the Constitution, and Admission of Members.
2. Reading the Minutes of last Convention.
3. Reports of Officers and Standing Committees.
4. Election of Officers.
5. Retiring President's Address.
6. Induction of Officers.
7. Reports of Special Committees.
8. Miscellaneous Business.

ORDER OF DISCUSSION.

1. The best means of improving the practice and elevating the profession of Dentistry.
2. Anæsthetics—Their proper use and relative value.
3. Extracting Teeth: When it should be done and when not,—the best instruments for the purpose, and the subsequent treatment, when any is required.
4. Absorption of Alveolar Process—Causes and Treatment.
5. Filling Teeth: The relative value of different materials, and the mode of operating in difficult cases.
6. The best methods of obtaining accurate impressions and models of the mouth.
7. The relative value of different materials as a base for artificial teeth.
8. Miscellaneous.

All written communications must be read to open the discussion of the subjects to which they relate, and must not occupy more than fifteen minutes in the reading.

No member shall speak more than ten minutes at one time, nor more than twice on the same subject, without the unanimous consent of the Convention.

The subjects selected for discussion are usually practical, and are designed to elicit the results of actual experience and observation, rather than theories and speculations, which are better for the seclusion of the study than for public assemblies.

All Dentists, in regular practice, may become members of the Convention, and all such are hereby invited to attend.

L. W. ROGERS, Utica, N. Y.,
A. W. KINGSLEY, Elizabeth, N. J.,
J. A. WATLING, Ypsilanti, Mich.,
A. HILL, Norwalk, Conn.,
H. A. SMITH, Cincinnati, Ohio.
} *Executive Committee.*

ON THE ADMINISTRATION OF NITROUS OXIDE.

BY CHARLES C. BARKER.

Having noticed, recently, the death of two persons from the use of this gas, I am prompted to write a few lines concerning its administration. I commenced using the gas, as an anæsthetic, shortly after it was applied for this purpose by Dr. Colton in New Haven. I first used, in making it, an apparatus similar to those employed in the chemical laboratories for collecting gases. My "holder" was made of tin, of some forty gallons capacity, and very carefully put together; but I soon found that it was not the thing for convenient practical use. I therefore threw it aside, and obtained a large rubber bag, capable of holding thirty gallons when inflated, also purchased two smaller bags from which to give the gas, and in this way administered it for, perhaps, a month, until I adopted the method which I have since employed most successfully. Being aware that the vital principles of respiration were grossly violated while breathing from the bag as I was giving it, and as all others give it, so far as my knowledge extends, I was led to devise some method by which the breath could be *exhaled* without passing again into the bag to corrupt the remaining gas. To make the proposition more plain—the customary method of giving the gas is: to allow the patient to fill the lungs from a bag containing the doses, perhaps four gallons, throwing the *breath back into the bag*, and repeating the operation until the anæsthetic effect is produced. It is a well known fact that the breath cannot be many times *reinhaled* without inducing death. On this principle, the inhalation of carbon, (carbonic acid gas,) previously *exhaled from the lungs*, might have caused the death of the persons referred to. That I might obviate this, I had made an ebony tube or inhaler, about 5 inches long, of convenient size for the mouth, so constructed that it could be taken apart or unscrewed, thus separating it into two pieces. In the lower or shorter part, I had made a chamber, which is simply an enlargement of the diameter of the tube at that point, large enough to give free play, back and forth, to a conical stopper, which, drawing back as the breath is taken in through the tube, (the two parts now screwed together of course,) gives free passage to the gas. Then the lungs having been filled by the exhalation, the stopper is immediately blown back into the passage way, completely blockading it; thus preventing the breath passing into the bag. To give a vent, I had a hole made through the side of the tube into the chamber, out of which comes the exhaled breath; the hole being closed by the finger, another inspiration can be taken, unalloyed by the carbonic proceeds of previous contributions from the lungs. I will now, in a few words, describe my manipulation in giving the nitrous oxide: I have a light high table on which my large

rubber reservoir lies at all times; this I can easily draw up behind the operating chair; my ebony inhaler I connect to the faucet at the mouth of the gas bag, by a piece of three-eighths of an inch rubber tubing, perhaps two and one half feet long; the teeth having been examined and instruments laid ready, I request the patient to compress firmly the nostrils with the left hand, that the breathing may be done *entirely* by way of the tube; this being done, I place the tube in the mouth with my finger over the hole opposite the chamber, lifting it for the breath to escape whenever the little stopper clicks back into place; this is continued until the anæsthetic effect is satisfactorily produced; then shutting off the gas with my left hand, I remove the tube from the mouth and am ready to operate.

The effect of the gas varies much with different temperaments. I think, however, I can bring any one under its influence, provided they will inhale it properly. Some will breathe fully twice as much as others before arriving at the same point. I have extracted ten teeth during the influence of one inhalation, but this is above the average. Another thing essential I will mention before I close: care should be taken in making the gas to free it perfectly from chlorine: I wash mine very thoroughly. In conclusion, I wish to say that while we all know the practical, outward effects of the different anæsthetics on the patients under our charge; still, I, as one, very much desire to ascertain the true theory of their specific action in the system. We know their effects. But minutely, step by step, how are these effects produced? When introduced into the lungs, is it through the medium of the circulation, or do they act directly upon the nervous system?

MIDDLETOWN, CONN.

A CASE OF OSSIFICATION OF THE DENTAL PULP.

BY A. M. HILLS.

An interesting case of ossification of the dental pulp came under my care recently, and thinking it might be interesting, I send the following:

Mrs. M., of middle age, had the left anterior superior molar plugged with gold on its posterior aproximal surface, without more than the usual amount of pain. Nearly two years elapsed, when she called on me, complaining of soreness about the roots and surrounding tissues of the plugged tooth, and severe pain in the region of the antrum. An examination revealed an inflamed state of the gums, marked by bluish lines; scarified them freely and ordered chloroform liniment as an outside application. Next day returned with pain much increased and extreme soreness on touching the tooth, with keen sensibility to cold or heat. Removed the plugging and applied tannin and creasote; the pain abated, and the

treatment was continued several days, when the health of the tooth and tissues seemed to warrant a refilling, which was done without pain, and the tooth remained serviceable for nearly two years more, when the old trouble returned in a violent form. The former treatment was resorted to, but without benefit, and the third day administered ether and removed the tooth. Upon breaking off the crown, the pulp was found entirely ossified. Now, the peculiarity of this case is its difference from what are commonly called pulp stones, it being a complete ossification of the pulp, filling the entire pulp cavity, and did not reveal the least trace of moisture in the cavity.

CLEARFIELD, PA., January 30th, 1864.

EIGHTH ANNUAL COMMENCEMENT OF THE PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

BY JAMES TRUMAN, D. D. S.

The Eighth Annual Commencement of this institution was held at Musical Fund Hall, Philadelphia, on the evening of February 26th, 1864, in the presence of a large and intelligent audience. The order of Exercises consisted of Music by Birgfield's Orchestra, Prayer, Conferring of Degrees, and the Valedictory Address.

The Degree of Doctor of Dental Surgery was conferred upon the following named gentlemen, by the President of the Board of Trustees: R. H. Shoemaker, Pennsylvania; Alex. O'Callaghan, Cuba; Geo. J. Underwood, New York; Edwin C. Baxter, Maine; Abram S. Reber, Pennsylvania; Henry Cowie, Michigan; Federico Comas, Manuel Trujillo, Cuba; W. T. Shannon, New Jersey; J. G. Camp, J. W. Vanosten, G. W. Caldwell, Pennsylvania; S. C. Richardson, Illinois; J. B. Snow, Connecticut; George Clark, Vermont; Edward Lefaivre, Canada; Thos. E. Osmun, M. D., Pennsylvania.

The Valedictory Address to the Graduates was delivered by Dr. George T. Barker, Professor of Principles of Dental Surgery and Therapeutics. He said:—

GENTLEMEN: It is my privilege, as it is my pleasure, on behalf of the Faculty of this College, to be the first to extend to you the hand of congratulation on the successful accomplishment of your studies in this institution; and it is with unfeigned pleasure that we welcome you to the new relation of professional brotherhood, co-laborers in the field of Dental Science. But think not though your studies are concluded in this College, that your student life is ended; on the contrary, this evening's exercise should truly be a *commencement;* and your future course should be characterized by the earnest effort to acquire, and put in practice, such information as may tend not only to your own professional success, but to the advancement

of your chosen calling. It will therefore be an injustice to yourselves, to your profession, and this institution, to cast aside as no longer needful those standard records of scientific research, which have been recommended for your information, and which contain the aggregated labors of the enlightened minds of numberless earnest workers in the field of science. These are truly the unbroken links which connect the present with the past, and which will live as lasting monuments to such contributors long after the chiseled marble which marks their mausoleum shall have turned into dust.

The lectures to which you have listened during the past session, have been, as they ought to be to the dental student, both practical and theoretical. From the chair of Anatomy and Physiology, you have been instructed in the formation, development, and mechanism of this wonderful frame-work, of the intimate relation which exists between each organ, or set of organs—though to the uninstructed eye appearing insignificant, are yet of the utmost importance to the perfect working of this wonderful machine,—of the various physiological processes, as circulation, respiration, digestion, &c., which are constantly going on in the body, uninfluenced by the will, holding in check all chemical laws, which are everywhere universal and unchangeable, unless modified by that vital force which no human mind can ever hope to fathom, which is known only to infinity itself. From the chair of Chemistry, you have had imparted to you information of the elementary bodies which enter into the formation of matter in all its varied forms and combinations; of the unchangeable laws which govern their union, one with another; and lastly—to you of the utmost importance—a knowledge of those metallic substances with which your hands must become familiar, both in the laboratory and operating room. From the chair of Pathology and Therapeutics, the various forms of disease have been considered, as seen in those delicate structures which it is your province to treat; of the local and constitutional influences tending to develop such morbid conditions, and the medicinal agents requisite to treat and restore to health those tissues. And last, though by no means the least important, is the instruction you have received from the chairs of Operative and Mechanical Dentistry. From these, valuable information necessary for every day practice has been expounded: for without adequate knowledge on these topics, your whole career will be one of trouble, anxiety, and non-success. In the respective Clinics of these branches you have been required to put in practice the knowledge derived from the different chairs, thus permitting you to approach with confidence, at the very outset of your career, those complicated cases requiring dental attention; enabling you also to avoid those difficulties and dangers which overwhelm and render valueless the services of the inexperienced and the ignorant. Have you profited by these teachings? Future years in the far off

distance must give back the answer. My heartfelt wish goes out that it may be indeed an affirmative one.

In the selection of a calling or profession, as indeed with every important step in life, it is always well to hesitate and perform a course of self-examination. The world is filled with the sad evidences of misapplied and misdirected labor. On every hand we witness the heart-broken, despondent and unsuccessful pursuer of some occupation, which, were his talents properly directed, would be a shining light in an other calling. Our own profession is, unfortunately, not without its representatives of this class, who perhaps struggle along for years, practicing what they do not, and, seemingly, *care* not to understand—imperfectly following their calling merely as a means of livelihood, and at last, after an aimless life, sink into oblivion. I should not, however, say oblivion, for they are not unremembered, as unfortunate possessors of ruined dental organisms live to remember them to their mortification and sorrow. I say, therefore, have you made the self-examination, and are you willing to devote yourselves to this work? If you have *not*, let me conjure you so to do; and once having determined, place your hands to the plow and steadily go forward. What, some may ask, are these requisite qualifications so necessary to fit one for a Dental Practitioner? I would answer: *First*. A general knowledge of the science of Medicine and Surgery, and a thorough familiarity with the science of our specialty. *Second*. Manipulative ability and mechanical skill. But even these are not the only requisites, others are just as important—and, indeed, may be considered as indispensable— they are Honesty, Perseverance, Patience, and a love for your chosen calling. What can I say to you that will elevate in your esteem that *godlike* virtue, Honesty? And yet, in the outset of your career, let me entreat you to be steadfast in your honesty of action and of purpose; be not enticed from this by any of those temptations which present so alluring an appearance, and which seem impossible of detection. Work, which you know is imperfectly performed, may pass from your hands, and though not accomplishing what it *should* accomplish, may yet be retained a sufficient length of time to exonerate you from the blame of an imperfect operation. But if it is early in your career, your self-respect will have suffered, and though perhaps you may determine it shall not again occur, yet once having given way to temptation, the second occasion will be less easily resisted than the first; for it seems to be a universal law, that evil, no matter how repulsive or hideous its form at first sight, will, if familiarized, at first be tolerated and excused, and at last embraced. Therefore let me urge you to be honest; speak well of your professional brethren, of those who are aiming to place your specialty where it properly belongs, and which it can *never obtain*, and retain, unless its practitioners are men of high-toned honor and integrity. Too

many, unfortunately, when asked as to the capabilities of such and such a practitioner, cannot refrain from some sly innuendo, or significant remark, which is calculated to convey an unfavorable estimate of his abilities. This is most ungenerous to associates in the same work, and tends to create in the minds of the public, doubts as to the benefits to be derived from Dental Surgery and the knowledge of its practitioners. All, however, who claim to be dentists, are not thus worthy of your consideration. Thus the unprincipled imposter, whose flaming advertisement proclaims how much he has done, and how much he can do, for suffering humanity, has no such claim; his aim is not how much good he can accomplish, but how much pecuniary benefit he alone may derive. Where such are met with, you may caution and advise the unwary, and it is undoubtedly your duty so to do. This class are now most fortunately passing out of existence, for as the progress of mankind continues, the relics of the dark and unenlightened ages give way to a more cultivated, scientific and honorable practice.

Perseverance and patience, two qualities of the utmost necessity to the professional man—without them, one may possess the genius of a Newton, or a Franklin, and yet live unloved, unknown, and dying leave not even a footstep as a trace of an existence. With them, any young man, even of ordinary endowments, may make his mark and become a useful and valued member of society; and that community will more especially value him, if he be engaged, as you are, in the practice of a profession having for its aim the alleviation of human suffering. If we look around us, on every side we behold men who, without advantages in early youth, yet still attain high positions in the temple of fame. An examination of their career reveals to us that they possess indomitable perseverance, energy and patience; they are, indeed, the *irrepressible*, and they no more succumb to difficulty than does the little life-boat which rides so successfully the troubled sea, dashing from its tiny sides the swelling waves, by which, at first appearance, it seems destined to be overwhelmed, but which glides away, leaving only the dripping spray as an evidence of dangers past. Perseverance and patience are qualities which will be found necessary to you as dental practitioners, particularly to those who are just about to commence professional life. You may possess abilities of the first order, but it takes time for the public to appreciate them. Your castles built so joyously, may one after another fade away—the present and the future, to your anxious eye, seem dark and tempestuous. In that hour—if it should unfortunately come to one of you—let not your hearts despond, but take courage, remembering that those who gain the lasting honor of their fellow-beings are those who deserve it, and who have won it by earnest perseverance and untiring patience. To the professional man this season of silent waiting is usually one of considerable trial; but few there are who do

not experience it, and the unemployed and leisure hours, if properly devoted to the storing of the mind with the truths of science, may in after years be reverted to as some of the most profitably spent hours of the whole life. Therefore, let me urge you to treasure up the moments professionally unemployed, and turn them into seasons of usefulness and profit through the agency of study and of thought.

I have named as another requisite, a love for your chosen calling. This I consider of so much importance, that did you possess all the other qualities and lacked this one, I should say to you, hold! enter not the sacred portals; you have mistaken your calling, and for your own sake, as well as for the sake of others, select some other occupation. You may ask, how can I convince myself that I possess this? I would answer, you must be assured that you prefer to practice Dental Surgery to any other occupation, without reference to any pecuniary rewards it may offer. In other words, did a *number* of occupations present themselves to you, each offering the same inducements, you would prefer this above others. To our friends here assembled, and, indeed, to the public generally, this view of the subject may appear strange and singular; but, nevertheless, I feel confident that the most earnest workers in our profession feel it, and truly practice their profession because they love it. Perhaps all can understand the fondness with which an artist watches and views the imagery which his fingers trace in response to the promptings of his imagination, and as each outline or figure becomes more distinct, he becomes more and more intensely *interested*, until at last, having completed the picture, he is ready to exclaim this is indeed unalloyed pleasure. Let me ask you, at what time does that artist experience the most true happiness? Is it when a sale has been effected, and he receives an amount of money for the same? If he is indeed an artist, I contend he will have experienced that real pleasure in its conception and realization, which gold cannot buy, or its absence take away. The same feelings does the true dentist experience, heightened, if possible, by the knowledge of the good he is doing to others. A defective dental organism is presented for treatment, he sees that portions of the teeth have been lost by disease, and that unless the disease be promptly arrested, the dental organs must be lost in a comparatively short period of time. He *first* carefully removes the dead and decaying parts, and proceeds, secondly, to replace those lost portions. He, too, then witnesses the hand respond to the promptings of the mind, and as he sees each particle of gold welded compactly one to another, the metal taking the shape and form of the lost structures, he, too, experiences that innate feeling of satisfaction, which is to him of more real value than the remuneration, be it ever so great, which he receives for the operation.

There are other qualifications which I have not named, which are of

the first importance; such as pleasing address and agreeable manners. On these last named qualities will depend, to a great degree, your future success; possessing them, you will be enabled to relieve many of your operations of their painful and disagreeable character; and mildness, patience, and judicious sympathy will not only attract, but permanently retain, those who, once seeking your advice and skill, are alleviated by you. Not to every one is given the courtlike manners of a Chesterfield, or the polished address of a Sumner or a Lamartine; but every one, no matter how rude his speech or unpolished his manners, can convey in a moment the fact that he can appreciate suffering, and has heart enough not to be insensible to it when called upon to relieve it. Therefore, let me urge you to be gentle and kind to those who come in agony, sometimes unspeakable, to seek your aid; never seeking to convey the impression to the sufferer that you consider them foolishly exhibiting feelings which you, at least, cannot appreciate or respect. I have thus briefly sketched the qualifications requisite, in my judgment, for the dental practitioner. Do you all possess them? Examine and satisfy yourselves.

A glance around us attests the fact, that the age is making constant and increased demand; we see old theories giving way to new; we see enlightened reason, truth and humanity, taking their appropriate stations; everything bears the mark of change—of progress. We cannot, as a profession, expect or wish to be exempt from this progression. The demands of the age upon us are increasing; how can we respond to them? I would answer, each one of you can contribute in this respect, and if you properly do your duty, you cannot fail in this work. Let each one who becomes a dentist not only constitute himself a practitioner, but a teacher of the principles of dentistry. Allow me to explain. We, as Americans, justly claim that the natural teeth are more valued, and the benefits of dental surgery better appreciated in this, than in any other country; but, every one must be aware that, as a nation, we are far from having a just regard for the natural organs. Who has not heard the oft-repeated remark, "that no matter if I do neglect my own teeth, I can have them replaced by artificial ones?" Every community is filled with numbers who are strangers to the proper rules by which the teeth may be retained in a healthy condition. Every enlightened physician meets with various derangements of the system, induced either directly, or indirectly, by dental disease. Again, all possess that national vice which calls down upon us the reproach of European nations—of eating our meals too rapidly, of "bolting" instead of properly masticating our food, living falsely, and predisposing ourselves to disease. These are a few of our national vices, who shall correct them? Who can so appropriately impart instruction, as the practitioner of our specialty? We, therefore, say, let every dentist constitute himself a teacher in his own community; let him impart that information to the

enquiring which he himself possesses, and which to him has been so freely expounded. Let him impress the importance of care, attention, cleanliness, and appropriate treatment when early diseased; of the responsibility resting upon parents to pay proper attention to the temporary teeth of their children, which are now, I am sorry to say, so universally neglected; the only remark which may be elicited, being the statement that "it is of but little consequence as they will soon be replaced by the permanent ones." Knowing their value, impress upon them your own convictions, and rest not satisfied until you have *demonstrated* to them the truths of your assertions.

Gentlemen, the words to which you have listened from the lips of the President of the Board of Trustees of this College are not unmeaning. The Degree of Doctor of Dental Surgery is not an empty honor conferred upon you by us, but an honor won by yourselves by patient labor and industry. It is a testimony to the fact that you have diligently studied in this institution the science of dentistry, and that after a thorough examination we have found you worthy, and, therefore, confidently ask the world to repose confidence in you. But even the possession of a diploma will not place you in the front rank of your colleagues—that honor you must win for yourselves; the foundation being well and truly laid, the superstructure is now to be added; look to it, therefore, that it be of such a character that not only yourselves, but that we, as your teachers, may view with pride and satisfaction your future career. Remember, too, that what you accomplish will not only establish your position and title to respect in the world, but, perhaps, that of numbers of your brethren who are toiling onwards, and of thousands who may follow you. Not all who set out in life, with the noblest determinations, win this courted honor; allurements are on every hand which tempt, successfully, the unwary; thus many, whose early career gave promise of extended usefulness, sink exhausted by the wayside or toil on, dishonoring themselves, and a dishonor to their calling. The professional man, above all others, needs to be ever on his guard; the relation existing between his patients and himself must necessarily be of an intimate character. He cannot hope for, nor expect that relationship, unless his every day life will bear the pure and glorious sunlight. Avoid, therefore, those miscalled "pleasures" which will tend to detract from your good name, and ever remember that you have willingly and cheerfully devoted yourself to the high and noble duties which you have publicly assumed to-night, and which have for their object the holy mission of alleviating human suffering. Before closing my remarks, I feel impelled to express gratitude and thankfulness that we have been enabled to pursue our appropriate studies and duties of the past session, surrounded and shielded by the blessings of peace. No tumults of mighty hosts rushing to conflict has fallen upon our ear; the

thunder of artillery of opposing armies has not disturbed our nightly slumbers. But though our ears have not heard these direful sounds, let us not even in this hour forget that this quietude is purchased for us, by a brave band of devoted hearts, who are daily and hourly sacrificing health, life, and all man holds most dear for the preservation of our peace and the perpetuation of our glorious Union, now thrice glorious as she emerges from the conflict, elevating high in air the emblems of universal Liberty, Justice and Humanity. Let every heart then respond to these feelings of patriotism, and while enjoying the blissful security of our homes and our firesides, acknowledge appropriately these blessings, and never forget or withhold that sympathy which our cause so justly merits. Where is the American who has read the history of our revolutionary struggle, and has there seen recorded the trials, privations, and sacrifices made by the patriots of those times, who has not felt his heart swell with emotion, and as deeds high and noble have been detailed, has not the inward wish been breathed, would that *I had lived* in those days that I too might have participated in those trials, and have proved my devotion to so worthy a cause? And as time passes, and the pen of the historian traces the history of this conflict against oppression and injustice, the youths and maidens of future ages will read the record of our trials and, I doubt not, breathe the same wish that they, too, might have lived and have proved how glorious is the recompense of those who are willing to lay *all* upon the altar of their country. And finally, gentlemen, I close these remarks with the earnest wish that every duty in life may receive from you a faithful performance, and on behalf of my colleagues and myself, I bid you "God speed" and a heartfelt farewell.

The address elicited marked attention, and was warmly applauded. At its close, the orchestra performed the national airs, which called forth enthusiastic applause, the audience rising in a body; on their conclusion, a benediction was pronounced by the Rev. Wm. H. Furness.

The following Demonstrator's Report of the Operative Department is of interest, showing, as it does, the relative liability of the teeth to caries.

Number of patients visiting the Clinic	2202
Number for whom the following operations were performed	1687

Of fillings, there was inserted

Front Incisors	137
Lateral Incisors	105
Cuspidati	42
Bicuspids	267
Molars	564
Fangs	201
	1,316

Of these there were of

Gold	607
Tin	690
Amalgam	6
Hill's Stopping	13

Miscellaneous Operations.

Superficial Caries Removed	15
Removal of Salivary Calculi	85
Treatment of Periostitis	37
" and Filling Pulp Cavities	201
" of Alveolar Abscess	24
" of Inflammation of the Gums	5
" of Partial Necrosis	15
" of Diseased Antrum	2
" of Irregularities	15
" of Necrosis of Superior Maxilla	1

Extraction of Teeth and Roots, there was of

Front Incisors	307
Lateral Incisors	261
Cuspidati	282
Bicuspids	485
Molars	777
	2,112
Total number of operations performed	3,828

Editorial.

THE ARTICLE promised in the January number of the TIMES, on Nasal and Palatine Defects, from Prof. Wildman, and also the one on Nitrous Oxide, from Prof. Buckingham, though in type, have been crowded out in consequence of other matter. Prof. Barker, on account of severe illness, has been unable to continue his article on Creasote in this number.

C. N. P.

SOME WEEKS since, we received from Dr. S. S. White, some WAX COMPOUND, which, for taking partial impressions, is certainly the best article in use.

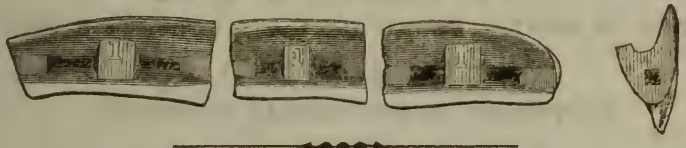
From the same source, we have also received a package of Felt Cloth, which, in connection with pulverized pumice, spar, or silex, is most excellent for removing the stains from the teeth: its virtue consisting in the tenacity with which it retains on its surface the powder used. C. N. P.

VULCANITE TEETH.—We desire to call attention to the new kind of teeth for vulcanite base, manufactured by Rubencame & Stockton. The improvement consists in the method of fastening without the use of platina rivets, and appears to us to combine many advantages not to be obtained in teeth of any other description, we have ever seen or used.

There can be no possible danger of exposing rivet heads or ends in finishing, or fear of the teeth drawing away from their rivets (as in ordinary pin teeth,) on the contrary, we believe that no more durable or simple fastening can be desired than these afford, presenting at the same time, so complete and accurate a finish, with so much less risk and labor in mounting.

Below we give a cut, showing the heel surface of some sections, and also an end view, the rubber forcing its way into the openings, and over the edges of the gum, inside and out, affords a perfectly solid foundation, and in fact, becomes as it were, a part of the tooth itself.

We believe they are good, and recommend them to the Profession generally. *See their advertisement.* G. T. B.



THE FACULTY would respectfully return their thanks to Dr. Hunter, of Cincinnati, for some finely executed separating chissels; also to Mr. J. A. Woodward, of Philadelphia, for five very fine specimens of native copper, and one of crystalized carbonate of lime from Lake Superior; and to Dr. A. M. Hills, of Clearfield, Penna., for a molar tooth with ossified pulp.

PUBLISHERS' NOTICE.

The present number closes the first volume of the DENTAL TIMES. The first number of the second volume will be issued early in the month of July, and the succeeding numbers will appear, as usual, quarterly. We shall endeavor, as heretofore, to furnish the readers with communications, original as well as eminently practical, and those desiring the journal, will please to so signify by remitting the price of subscription, one dollar, to Dr. C. N. Peirce, 501 North Seventh street, Philadelphia.

PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

THE NINTH ANNUAL SESSION, 1864-'65.

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DEMONSTRATOR OF MECHANICAL DENTISTRY.

The Lectures to the Regular Course will commence on the 1st of November and continue until the 1st of March.

During the last two weeks of October, preliminary Lectures are delivered, one each day.

The Rooms for Operative and Mechanical Dentistry are open from the 1st of October and throughout the session, under the supervision of the Demonstrators.

The Dissecting Room, under the superintendence of the Professor of Anatomy and Physiology, is open during the session.

Fees for the Course, (Demonstrators' Ticket included,) -	**$100**
Matriculation, (paid but once,) - - - - -	**5**
Diploma Fee, - - - - - - -	**30**

C. N. PEIRCE, Dean,

C. P. REESS, Janitor. **501 North Seventh St., Philadelphia.**

P. S.—Board may be had at from $3.50 to $6.00 per week.